JAN 26 1995

Wehran EMCON
Northeast

Wehran Engineering Corporation
1 Mill Street, Box B15
Burlington, VT 05401-1530
Tel: (802) 658-6884
Fax: (802) 658-5014

January 19, 1995

Mr. Charles Schwer
Vermont Department of environmental Conservation
Hazardous Materials Management Division
103 South Main Street West Building
Waterbury, VT 05671-0404

Re: United States Postal Service
Initial Site Investigation
Ludlow, Vermont Post Office
Wehran EMCON Project No. 04722.02

Dear Mr. Schwer:

On behalf of the United States Postal Service (USPS), we are submitting for your review and comment, the Initial Site Investigation Report documenting our recent field investigation activities at the Ludlow, Vermont Post Office. After you have reviewed this report, please contact us with any questions or comments.

Sincerely,

WEHRAN ENGINEERING CORPORATION

Cindy Thompson Davis
for Eugene J. Martin
Task Manager

Nicholas P. Nowlan, P.E.
Project Manager

NPN/atd

Attachment

cc: W. Rister - USPS

31.1/95.04722.02

INITIAL SITE INVESTIGATION

198 MAIN STREET

LUDLOW, VERMONT 05149

SMS SITE #94-1714

UST FACILITY #2286

Prepared For

UNITED STATES POSTAL SERVICE

WINDSOR, CONNECTICUT

January 1995

WEHRAN EMCON NORTHEAST

Burlington, Vermont

Environmental Engineers • Scientists • Constructors

INITIAL SITE INVESTIGATION

UNITED STATES POST OFFICE

198 MAIN STREET

LUDLOW, VERMONT

SMS Site #94-1714

UST Facility # 2286

Prepared for

United States Postal Service

6 Griffin Road North

Windsor, Connecticut 06006-7030

Latitude 43°-23'-14"N

Longitude 72°-42'-01"W

Prepared by

WEHRAN EMCON NORTHEAST

1 Mill Street

Burlington, Vermont 05401

WE Project No. 04722.02

January 1995

EXECUTIVE SUMMARY

Wehran EMCON Northeast, Inc. (Wehran EMCON) has conducted an initial site investigation at the United States Post Office located at 198 Main Street in Ludlow, Vermont. The property is owned by Mark Gauthier of Ludlow, Vermont and is serviced by Ludlow municipal water and sanitary systems. This investigation was initiated in response to the discovery of soil contamination during the removal of a 1,500 gallon No. 2 fuel oil underground storage tank (UST) on the property. The initial site investigation included a file review, the installation of three monitoring wells, soil and groundwater sampling for total petroleum hydrocarbons (TPHs) and a sensitive receptor survey.

TPHs at a concentration of 4,600 milligrams per kilogram (mg/kg) were detected in a soil sample collected at the water table surface (9 to 10.5 feet) in boring MW-1. Low level TPHs were detected in soil samples collected from monitoring well locations MW-2 at a concentration of 170 mg/kg and MW-3 at a concentration of 350 mg/kg. The source of TPHs at these two borings does not appear to be related to the former UST excavation because of their distances and locations. A potential off-site source of TPHs could be related to either undocumented onsite spills or the USTs located at the Jiffy Mart to the west and adjacent to MW-3. The analysis of the two soil samples for the presence petroleum degrading bacteria from monitoring well locations MW-1 and MW-2 indicated a high probability that petroleum degrading bacteria were present in both samples. TPHs were detected in groundwater at a concentration of 19 milligrams per liter (mg/ℓ) in monitoring well MW-1 installed in the UST excavation. No free floating petroleum product layer was observed in this well. However, an oily sheen was noted on the purge water. No TPHs were detected in groundwater samples collected from monitoring wells MW-2 (upgradient) and MW-3 (cross-gradient) of the UST excavation.

Results of the receptor survey did not indicate impact to nearby surface waters, downgradient building basements or utilities. In addition, the subject property is not located within a well head protection area and no nearby drinking water supplies were identified.

Because of onsite physical constraints and difficult drilling conditions in the vicinity of the former UST, the full extent of petroleum impacted soil and groundwater has not been delineated. Based on the results of the initial site investigation, it does not appear necessary to implement corrective actions at the site at this time because: no impact to sensitive

receptors have been identified; no separate phase petroleum product was identified in the source areas; no drinking water sources exist on or in the vicinity of the subject property.

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Table 2

UNITED STATES POSTAL SERVICE

LUDLOW, VERMONT

PROPERTY OWNERSHIP - 198 MAIN STREET

Property Owner	Date Acquired	Comments	Recorded Book/Page
Mark Gauthier & Steve Lorenz	5-23-88	Post Office	117/29
James G. & Mary Collins	3-28-85	Post Office	51/409
Marvin Gold	11-14-63	Post Office	---
Seymor B. Levin	circa 1963	Retail	93/81
Reginald S. Devereux	8-10-36	Retail	39/235
B. Marshall Whelden	---	Retail	---

1.0 INTRODUCTION

Wehran EMCON has conducted Initial Environmental Site Investigation activities for the United States Postal Service (USPS) as required by the Vermont Department of Environmental Conservation, Hazardous Materials Management Division, Sites Management Section (VTDEC). This investigation was performed to determine the extent of No. 2 fuel oil contamination discovered during removal of an underground storage tank (UST) at the Post Office facility located at 198 Main Street in Ludlow, Vermont. The UST was replaced with a 600 gallon above ground storage tank (AST), no other USTs or ASTs are known to exist on the site. The site is owned by Mark Gauthier of Ludlow, Vermont and leased by the USPS.

On October 20, 1994, Wehran EMCON observed the removal of a 1,500 gallon No. 2 fuel oil UST at the Ludlow Post Office. During the removal of the tank approximately 8 cubic yards of soil, with peak headspace analysis readings of 124.0 parts per million (ppm) as measured with a portable photoionization detector (PID), was segregated and stockpiled. Several small holes were observed in the bottom of the tank. Stained soil and a fuel oil odor were noted. Because of space constrictions at the site, the stockpiled soil was subsequently returned to the excavation. Soil analytical samples collected and composited from the sidewalls of the excavation measured 870 milligrams per kilogram (mg/kg) and a sample collected from the bottom of the excavation measured 1,400 mg/kg.

Based on the condition of the tank, visual observations and soil analytical results a "Site Investigation Expressway Form" was submitted to the VTDEC along with a UST Closure Report (Appendix A).

1.1 PURPOSE

The VTDEC requires an Initial Site Investigation be conducted on properties when contamination is present in soils above VTDEC PID headspace readings as outlined in the VTDEC Guidelines for Handling Petroleum Contaminated Soil and Carbon Media (1992), or where a release or suspected release of hazardous materials has occurred. In order to be responsive to the VTDEC guidelines, an Expressway Initial Site Investigation was conducted at the Post Office facility.

The purpose of the site investigation was to:

- determine the potential source of contamination;

- determine the degree and extent of soil and/or groundwater contamination to the site;
- evaluate potential contamination migration pathways;
- to identify potential receptors that would be directly affected; and
- determine if and what type of corrective action is necessary to control, mitigate and monitor the effects of the release.

1.2 SCOPE OF WORK

The approach utilized to collect the information required for the site investigation was as follows:

- Records Review
  - gather and evaluate available information at the DEC and town offices relevant to the environmental conditions at the subject property and adjacent properties.
- Subsurface Investigation
  - installation of soil borings and monitoring wells on the subject property with the collection of soil and groundwater samples to determine the degree and extent of contamination.
- Water Level Measurements and Well Survey
  - to determine the location and elevation of the monitoring wells/soil borings installed and evaluate the direction of groundwater flow.
- Receptor Survey
  - to identify any sensitive receptors that have the potential to be adversely impacted by the contamination onsite.

The information collected during the above tasks has been summarized in this report. The procedures employed were conducted and the report has been prepared in accordance with the VTDEC Draft Site Investigation Guidance Document (May 1994) and Wehran Standard Operating Procedures (SOPs).

2.0 SITE DESCRIPTION

2.1 SUBJECT PROPERTY

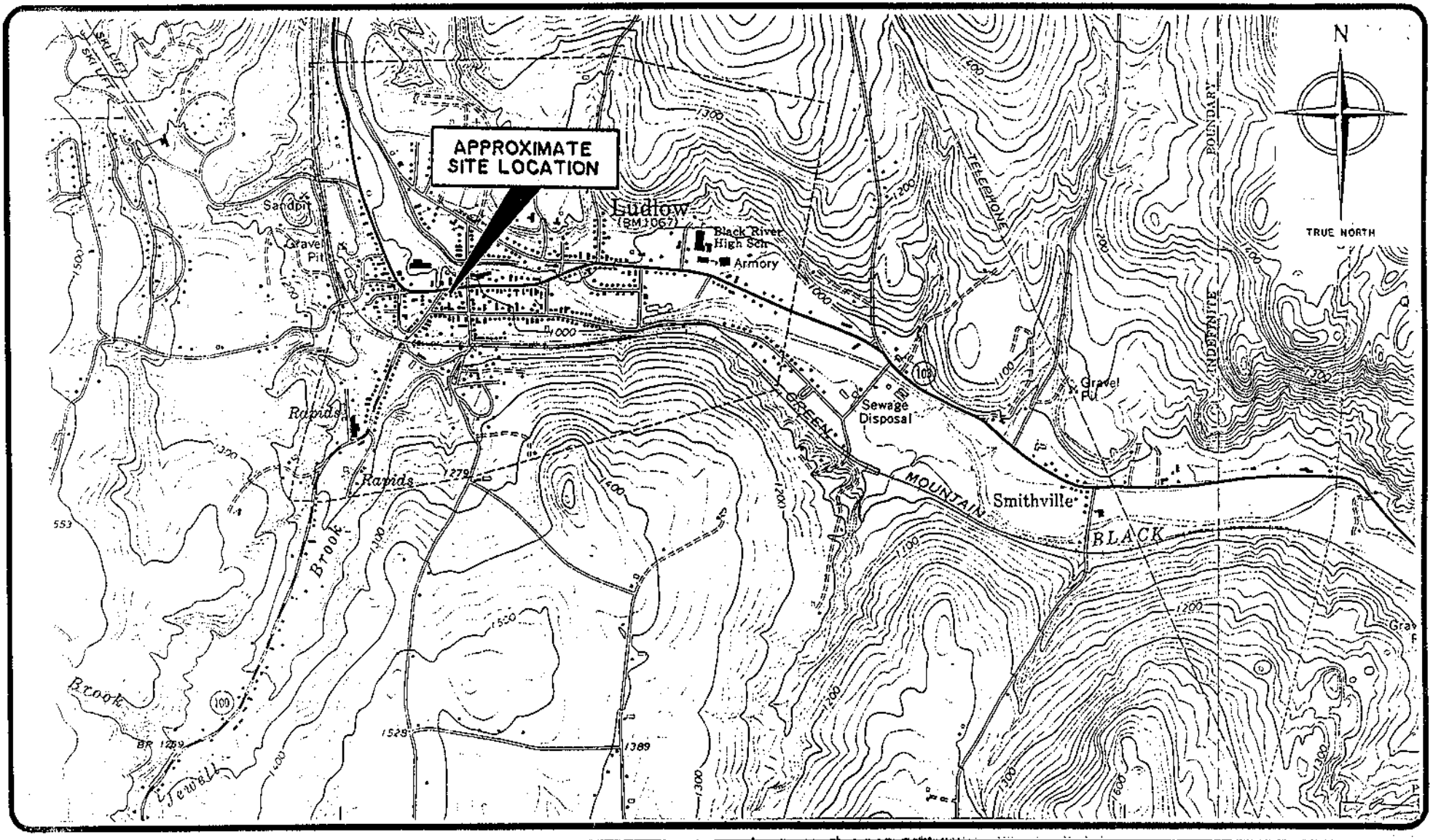
The United States Post Office is located at 198 Main Street in Ludlow, Vermont. The latitude is 43°-23'-14"N and the longitude is 72°-42'-01"W as scaled from the United States Geologic Survey (USGS) 7.5 minute quadrangle, Ludlow, Vermont (Figure 1). The subject property is 0.24 acres, as identified as Parcel 4 on the Ludlow tax assessor's map, and consists of a 3,022 square foot, 1-story brick building on a slab with a paved driveway and parking area (Figure 2). The building houses a standard Post Office and mail processing area with a loading dock and parking in the rear (south side) of the building. The property is served by Ludlow municipal water and sewer. The only underground utility is a catch basin and storm sewer located in the rear parking lot. According to Larry Melen of Ludlow Planning and Zoning, the catch basin is connected to a stormwater line that runs north and discharges into the Black River. However, Loren Greenslet of Ludlow Public Works indicated that the storm line may connect to the storm or sanitary lines on Main Street. The topography of the site is relatively level, however, the rear parking lot is approximately 3 to 4 foot lower than the surrounding area as a result of the construction of the Post Office loading dock.

2.2 SUBJECT PROPERTY NEIGHBORHOOD

The site is in a commercial area and is bounded to the east by a 2-1/2 story commercial building containing a property management company, a beauty salon and an art gallery, to the southeast by the Town of Ludlow Municipal Building which houses various Town offices, to the south by a barn, to the southwest by a 2-story residential building and to the west by a Citgo/Jiffy Mart gas station. Attached to the south side of the gas station is a small commercial building with office space. The property is bounded to the north by Main Street and the IGA Grocery store further to the north. To the northeast of the site, across Main Street is the Ludlow Mobil Gas Station (see Figure 2 and Table 1). The subject property neighborhood is served by Ludlow municipal sewer and water.

2.3 ENVIRONMENTAL SETTING

The subject property is located in a commercial area of Ludlow, Vermont. The topography of the site is predominantly level. However, the rear parking lot is in an



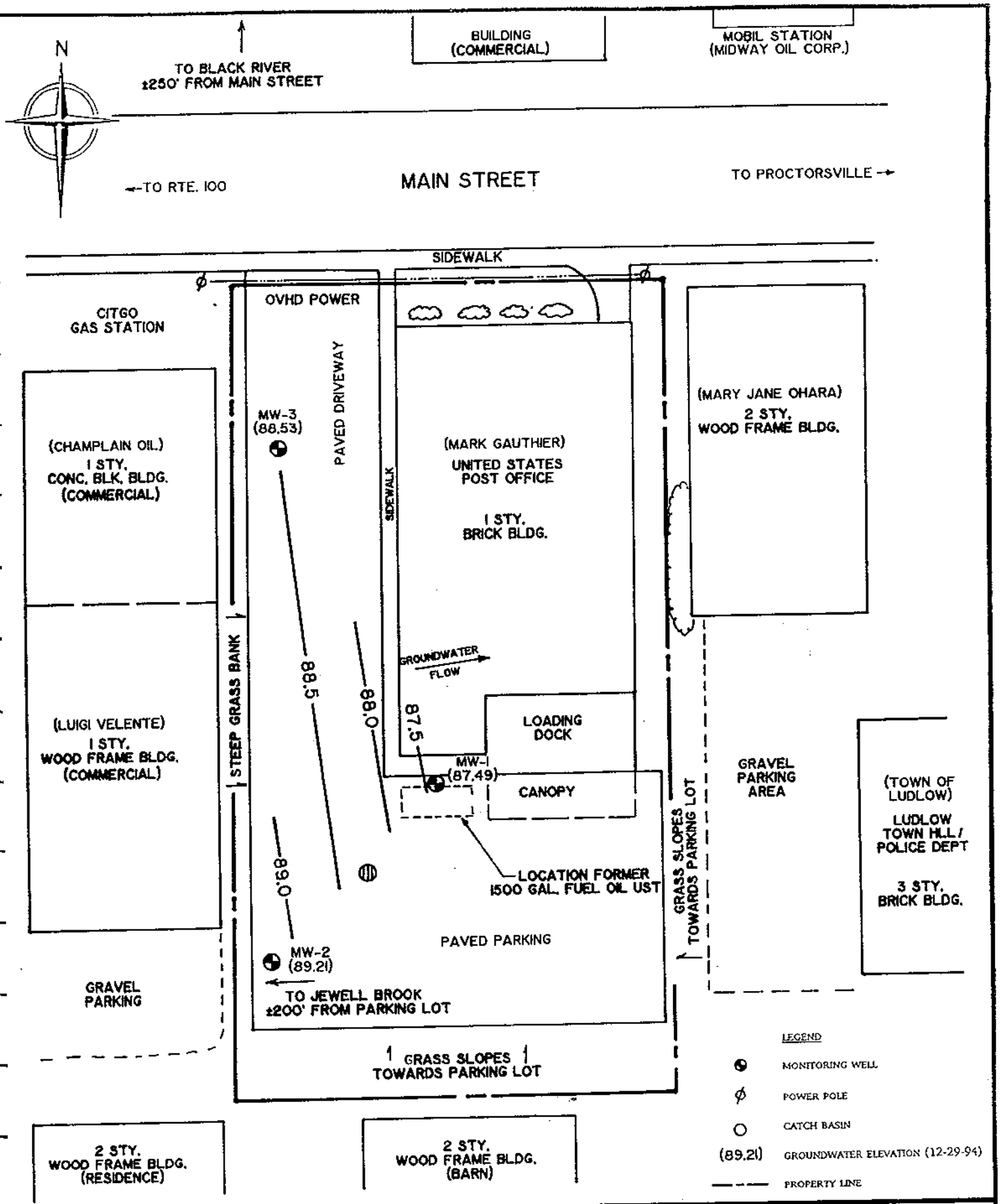
Wehran EMCON
Northeast
Wehran Engineering Corp.

DATE 10/21/
DWN. EJM
APPR. NPN
REVIS.
PROJECT NO.
04722.01

SITE LOCATION MAP
UNITED STATES POSTAL SERVICE
LUDLOW VERMONT

SOURCE: USGS QUADRANGLE LUDLOW, VT.

FIGURE 1



Wehran EMCON
Northeast
Wehran Engineering Corp.

SITE PLAN

UNITED STATES POSTAL SERVICE

LUDLOW VERMONT

FIGURE 2

Scale: APPROX. 1" = 20'

Date: 1-9-95

Project No: 04722.02

Table 1

UNITED STATES POSTAL SERVICE

LUDLOW, VERMONT

SITE AND ADJACENT PROPERTY INFORMATION

Property Owner	Association	Address	Telephone No.
Mark Gauthier Site Owner	United States Postal Service/Lessor	198 Main Street Ludlow, Vermont 05149	(802) 228-2300
Mr. William Rister USPS Project Manager	Unites States Post Office/Lessee	US Postal Service Facilities Service Office 6 Griffin Road North Windsor, CT 06006-7030	(203) 285-7237
Mary Jane O'Hara	Caldwell Banker	94 Main Street Ludlow, Vermont 05149	(802) 228-2845
Town of Ludlow Contact: Larry F. Melen	Planning and Zoning	Ludlow Municipal Offices PO Box B Ludlow, Vermont 05149	(802) 228-2677
Luigi Valente	Commercial Space	Not Available	(802) 228-2677
Champlain Oil	Citgo Station	45 San Remo Drive S. Burlington, Vermont, 05403	(802) 864-5380

approximately 3 to 4 foot depression formed during the construction of the Post Office loading dock. The topography of the surrounding area to the north of the subject property is gently sloping to the north down to the Black River, located approximately 250 feet to the north of the subject property. According to the United States Geological Survey (USGS) topographic quadrangle map, the property is at an elevation of approximately 1,000 feet above mean sea level. There is no surface water on the subject property. The nearest surface water is Jewell Brook, located approximately 200 feet to the northwest of the subject property.

According to the Groundwater Favorability Map of the Ottauquechee-Saxtons River Basin, Vermont (1968), the surficial materials underlying the site area are thick deposits of coarse-grained stratified glacial drift that have excellent groundwater potential. The Vermont Geological Survey (1972) defines the bedrock unit beneath the site as the Pinney Hollow formation, a phyllite and schist with beds of carbonaceous and schistose quartzite.

3.0 SITE HISTORY

The Ludlow Post Office, a single story brick structure, was constructed in 1964. Prior to 1964, the Post Office lot was the site of a retail store, which was likely a wood framed, two story structure with a residence for the store owner.

The Village of Ludlow has been the commercial center of the Town of Ludlow since its settlement in the late 1700s. The nearby Black River and Jewell Brooks have supplied the water power which made the early settlement of river valleys attractive. Properties both to the north and west of the Post Office have been the sites of small, water powered mills and shops.

Properties both to the north and west of the Post Office site are used for the retail sale of gasoline. Property to the south of the post office has been residential since the earliest settlement of the Village. The property to the east has long been in commercial use. Most recently, from 1973 to about 1986, there was a print shop located there and, since that time, a real estate office.

3.1 SITE OWNERSHIP

According to the records at the Ludlow Town Clerk's office, the subject property is listed on Tax Map 4 at Lot 4 and is owned by Mark Gauthier. According to the Ludlow Town Clerk's office, the present and past owners of the property are listed on Table 2.

Table 2

UNITED STATES POSTAL SERVICE

LUDLOW, VERMONT

PROPERTY OWNERSHIP - 198 MAIN STREET

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Seymor B. Levin	circa 1963	Retail	93/81
Reginald S. Devereux	8-10-36	Retail	39/235
B. Marshall Whelden	---	Retail	---

3.2 REGULATORY HISTORY

A regulatory file search for the subject property and surrounding properties was performed by Wehran EMCON personnel to obtain information relevant to the environmental conditions of the subject property and surrounding properties. The file search consisted of reviewing information from various town agencies in Ludlow, Vermont and the DEC in Waterbury, Vermont. The DEC file review included a review of the Water Supply Division well head protection area (WHPA) maps, Active Vermont Hazardous Sites List, Closed Vermont Hazardous Sites List, National Priority List, Spill/Release file and Registered and Permitted Tank files, and Pulled UST List. United States Environmental Protection Agency (USEPA) records regarding the Resource Conservation and Recovery Act (RCRA) Hazardous Waste Handler Index and Comprehensive Environmental Response Compensation Liability Information System (CERCLIS) were reviewed. Some of these lists are provided in Appendix B.

The following provides a description of the pertinent information obtained from the file search:

USEPA RCRA Index File

- The subject property is not listed (December 14, 1994) as a hazardous waste generator, treatment, storage or disposal facility.
- None of the abutting properties are listed as a hazardous waste generator, treatment, storage or disposal facility.

USEPA CERCLIS List

- The subject property is not listed on the USEPA CERCLIS list.
- None of the abutting properties are listed on the USEPA CERCLIS list.

Vermont DEC Active Hazardous Sites List

- The subject property is not listed on the VTDEC Active Hazardous Sites List.
- One site, Ludlow Mobil (Site #931500), identified on the Vermont Hazardous Waste Site List (September 8, 1994), is located in the immediate vicinity of the subject property. Ludlow Mobil is located at 145 Main Street, approximately 200 feet to the northeast of the subject property. Information in the file from the DEC indicates that a catastrophic release of gasoline occurred at the Mobil Station property. Corrective action measures were implemented that consisted

of surface water booms in the Black River, two soil venting systems, free product and limited groundwater recovery at the site.

Based on a groundwater contour map prepared by Griffin International, Inc., in the DEC file dated February 2, 1994, groundwater flow is to the northeast and appears to be downgradient with respect to overburden flow from the subject property. Several residences and commercial businesses were impacted by petroleum vapors as a result of the release.

Vermont DEC Closed Hazardous Sites List

- The subject property is not listed on the VTDEC Closed Hazardous Sites List.
- One site, Ludlow Jiffy Mart (Site #890342), identified on the Vermont Hazardous Waste Closed Sites List (October 27, 1994) abuts the subject property to the northwest. Mr. Bob Haslam of the VTDEC was contacted on December 29, 1994. Mr. Haslam indicated that in 1989, three 4,000 gallon gasoline underground storage tanks were removed for routine replacement on the Jiffy Mart property. Approximately 75 to 85 cubic yards of petroleum contaminated soil was excavated and removed from the site. Excavation of the petroleum contaminated soil was limited because of physical constraints. No evaluation of impact to groundwater was performed.

Vermont DEC Oil and Hazardous Materials Control Spill/Release List

- The DEC Oil and Hazardous Materials Control Spill/Release List revealed no record of oil or hazardous material spills or releases at the subject property or abutting properties.
- The DEC spill list identified two spills (No. 78-087 and No. 93-353) on September 9, 1978 and December 7, 1993 at the Ludlow Mobil. A description of the spill indicated that 2,000 gallons of gasoline was released during each spill.
- Mr. Bill Barre, spill coordinator for the DEC Hazardous Materials Spill Section was contacted on January 3, 1995. Mr. Barre indicated that the spills identified at the Ludlow Mobil were investigated by the DEC.

Vermont DEC Underground Storage Tank Files

- There was one UST registered for the subject property (facility ID #2286) on the Underground Storage Tank Facilities file (December 12, 1994). This tank was removed by Wehran EMCON Northeast, Inc. on October 20, 1994.
- There are five properties within 0.25 miles of the subject property that are registered UST facilities. These facilities include: Cumberland Farms, Inc. (#2289836), Jiffy Mart (#212), Ludlow Mobil (#931555), telephone office (#2289911), and The Mill (2056). The condition of these tanks is not documented in these files.

Vermont DEC Water Supply Division

The WHPA maps for Ludlow, Vermont were reviewed with Mr. Dave Butterfield of the DEC Water Supply Division. The subject property is not identified as being located within a WHPA.

Town of Ludlow Planning and Zoning Department

Mr. Larry Melen was contacted on December 20, 1994, to obtain information regarding hazardous waste spills/releases, above or underground tanks and fires for the subject property and immediate abutters. According to Mr. Melen, there is no record of any spills on the subject property. Mr. Melen was aware of the recent removal of the No. 2 fuel oil UST on the subject property. Mr. Melen indicated that a release of gasoline had occurred recently at the Ludlow Mobil Station property located 250 feet northeast of the subject property. In addition, Mr. Melen indicated that gasoline USTs were removed in 1989 on the abutting Jiffy Mart property, but was not aware of any impact to adjacent properties. Mr. Melen indicated that the subject property is served by Ludlow municipal water and sewer and there are no known private wells in the area of the subject property.

4.0 FIELD INVESTIGATION METHODOLOGY

4.1 SUBSURFACE INVESTIGATION

Prior to initiating onsite intrusive activities, Wehran EMCON prepared a site-specific Health and Safety Plan (HASP) detailing the potential health hazards, personal protective equipment and emergency information. As an initial task, Wehran EMCON conducted pre-work meetings with the drilling subcontractor and Postmaster to discuss project health and

safety considerations. Prior to excavation activities a DIGSAFE permit was obtained and utility lines were cleared to the extent possible with facility and local personnel. Field activities were conducted in accordance with the HASP. All site personnel involved in field activities fulfilled requirements of OSHA Standard 29 CFR 1910.120.

4.1.1 Soil Borings/Soil Sampling

On December 19 to 21, 1994, a total of three soil borings were advanced on the property which were completed as monitoring wells (MW-1, MW-2 and MW-3). The wells were installed with a truck mounted Mobil B-47 drill rig, by New Hampshire Boring of Derry, New Hampshire under Wehran EMCON supervision.

The initial subsurface investigation scope of work included the installation of three additional soil borings in the vicinity of the former UST to determine the extent of fuel oil contamination. However, difficult drilling conditions encountered prohibited the installation of these borings with available equipment and limited space. Eleven attempts were made at installing these additional three soil borings. Refusal was encountered on each attempt with a maximum depth of advancement of 3 feet.

MW-1 is located in the former UST excavation for the primary purpose of determining if groundwater had been impacted in the immediate source area. The second monitoring well, MW-2, was located in the southwest corner of the parking lot and intended to be the upgradient or background location. MW-3 is located in the paved driveway west of the Post Office. This location was selected to evaluate soil and groundwater conditions near the property boundary with the assumption that groundwater flow direction was to the north across the site. The selected locations of the onsite monitoring wells was restricted due to onsite physical constraints of the Post Office building, overhead and subsurface utilities. Monitoring well locations are shown on Figure 2.

Soil boring MW-1 was advanced with an 8-inch outside diameter (OD) hollow-stem auger to a depth of 16.5 feet below ground surface (bgs). Soil borings MW-2 and MW-3 were advance with a 4-inch inside diameter (ID) steel casing with roller bit and wash system to 15.5 and 15.0 feet bgs, respectively.

Continuous split-spoon samples were collected with a 2-inch OD, 24-inch long split-spoon sampler in accordance with American Society for Testing and Materials (ASTM) procedures. Geologic descriptions of the soil were recorded in the field in order to prepare detailed geologic logs in accordance with the Burmeister Soil Classification System.

Field screening tests utilizing the headspace analysis (HSA) method were conducted on each split-spoon sample. The tests were performed utilizing a MSA PID equipped with a 10.6 eV lamp. The PID was calibrated at the start of each day with 100 ppm isobutylene standard. Soil jar headspace readings are included on the soil boring logs in Appendix C. Representative soil samples from each split-spoon sample were collected into glass containers. The split-spoon sampler was decontaminated between uses with a tap water rinse, a deionized water rinse, methanol rinse and air dry followed by a final deionized water rinse. Drilling equipment was decontaminated between borings.

One soil sample was collected for analytical testing from each of the soil borings. The sample exhibiting the highest HSA was submitted for analytical testing. Soil sample MW-1/SS-5 was collected from soil boring MW-1 at a depth of 9 to 10.5 feet bgs. Sample MW-2/SS-5 was collected between 13 and 15 feet bgs from soil boring MW-2 and soil sample MW-3/SS-2 was collected between 4 and 6 feet bgs from soil boring MW-3. Soil sample collection was limited due to poor recovery in some split-spoons caused by large cobbles. The soil samples were transferred into laboratory supplied sample bottles and labeled with the sample designation number, collection date and collection time.

The soil samples were then packed on ice in a shipping cooler and accompanied by a completed chain-of-custody from the time of sample collection to the time of delivery to the laboratory. The analytical testing was conducted by Alpha Analytical Laboratories of Westborough, Massachusetts. Soil samples were submitted for total petroleum hydrocarbons (TPH) analysis by United States Environmental Protection Agency (USEPA) Test Method 418.1.

In addition to the above soil sampling, two samples were collected for bacterial profiling. One sample, SB-2/SS-5, was collected from the former UST location (MW-1) at a depth between 9 and 10.5 feet bgs. The second sample, SB-1/SS-4, was collected from the upgradient location (MW-2) at a depth between 11 and 13 feet bgs. The samples were placed in laboratory supplied plastic "whirl packs", labeled and submitted with a completed chain-of-custody form to Microassays Laboratory of Montpelier, Vermont. The bacterial profile analysis indicates if petroleum degrading bacteria are present for potential bioremediation of petroleum contaminated soils.

4.1.2 Monitoring Well Installation

Monitoring wells were installed in three of the soil borings to collect groundwater samples and measure groundwater depth. The monitoring wells consist of a 2-inch ID,

schedule 40, threaded, flush-jointed, polyvinyl chloride (PVC) riser pipe with a 10 foot section of machine slotted (10-slot) PVC well screen. The well screens were positioned to intersect the water table surface. A clean filter sand was installed in the annular space from the bottom of the boring to approximately 2 feet above the well screen. A bentonite chip seal 1 to 2 feet thick was placed above the filter sand. The monitoring wells were completed with a locking PVC compression fit plug and flush mounted protective casing cemented in place. Monitoring well construction diagrams and soil boring logs are included in Appendix C.

4.1.3 Monitoring Well Development

On December 20 and 21, 1994, the monitoring wells were developed by bailing with disposable bailers to remove drill cuttings, clean the well screen and improve the hydraulic connection between the well screen and the water bearing strata.

4.1.4 Water Level Measurements and Survey

On December 28, 1994, the water level of each monitoring well was measured to the nearest 0.01 foot, using an electronic water sensing probe. The water level measurements were collected to determine groundwater flow direction and to generate a potentiometric map (Figure 2).

The elevations of the monitoring wells were determined utilizing a Lietz B2C® Automatic Level. An assumed reference elevation was utilized as a vertical datum. Level loops were closed, balanced and adjusted. A monitoring well and groundwater elevation data table is included as Table 3.

4.1.5 Groundwater Sampling

On December 28, 1994, groundwater samples were collected from MW-1, MW-2 and MW-3. Prior to sampling, a Teflon® bailer suspended on nylon twine was then lowered to intersect the groundwater table in the wells for the purpose of observing the presence of floating free product, if any.

To assure that representative formation water was being sampled, the monitoring wells were bailed until the pH, specific conductance and temperature values of the discharge stabilized to within 10 percent variation. A minimum of three well volumes was evacuated from each well.

Table 3

UNITED STATES POSTAL SERVICE

LUDLOW, VERMONT

MONITORING WELL AND GROUNDWATER ELEVATION DATA TABLE

Monitoring Well Designation	Ground	Top of PVC	Top of Casing	Groundwater Elevation (12/28/94)	Comments
MW-1	97.42	96.49	97.42	87.49	Flush mounted roadbox
MW-2	98.73	98.45	98.73	89.21	Flush mounted roadbox
MW-3	99.50	99.33	99.50	88.53	Flush mounted roadbox

Notes:

1. Elevations expressed in feet. Based on assumed datum of 100.00 and established from field surveys conducted by Wehran EMCON Northeast, Inc.
2. Top of casing and top of PVC elevations are shown with cap removed.

Groundwater samples were then packed on ice in a shipping cooler and accompanied by a completed chain-of-custody form from the time of collection to the time of delivery to the laboratory. The analytical testing was conducted by Alpha Analytical Laboratories of Westborough, Massachusetts. Groundwater samples were analyzed for TPH by EPA Method 418.1.

4.1.6 Investigation Derived Waste

Soil cuttings generated during the installation of the soil borings were placed in a 55 gallon drum which was sealed and labeled. The well development and decontamination water was poured into a separate 55 gallon drum which was also sealed and labeled. The drums are stored onsite and the Postmaster was notified as to the contents and location of the two drums.

4.2 SENSITIVE RECEPTOR SURVEY

A sensitive receptor survey was conducted to identify any sensitive receptors that have the potential to be adversely impacted by the contamination onsite. The sensitive receptor most likely to be affected by fuel oil vapors from impacted soil and/or groundwater is the ambient air in nearby building basements. The survey included the following items:

- identification of nearby drinking water wells;
- PID field screening of any adjacent buildings; and
- description and inspection of nearby surface waters.

Mr. Larry Melen, director of Ludlow Planning and Zoning and Mr. Loren Greenslet, of Ludlow Public Works were contacted on December 20, 1994. Mr. Melen and Mr. Greenslet confirmed that the subject property, adjacent properties and entire Village of Ludlow is serviced by municipal water and sewer, and that there are no known private wells in the vicinity of the subject property. The municipal water supply for the Village of Ludlow is located eight miles outside the village limits at an elevation higher than that of the village.

The Post Office is constructed on a concrete slab and does not have a basement. However, Wehran EMCON personnel conducted air monitoring in the portion of the Post Office building closest to the former UST with a MSA Model 260 oxygen and combustible gas (O_2/LEL) meter and a PID.

On December 28, 1994, Wehran EMCON personnel conducted air monitoring with an O_2/LEL and PID in the basement of the building located at 94 Main Street, directly east of the site. The basement has a dirt floor and the foundation was constructed of stone and mortar. A 275 gallon above ground fuel oil tank was observed in the basement.

Wehran EMCON personnel also conducted air monitoring in the basement of the Ludlow Municipal Town Office building accompanied by Larry Melen of the Town of Ludlow. The Town Office building consists of a full basement with concrete floors and walls. Two 275 gallon above ground fuel oil tanks were observed.

The closest surface waters to the site are Jewell Brook (200 feet to the west) and the Black River (250 feet to the north). Jewell Brook was visually inspected from the intersection of Andover and Pleasant Street downstream to its confluence with the Black River. The Black River was inspected from the juncture of Jewell Brook downstream to the first concrete bridge crossing the river. The onsite catch basin was screened with a PID.

5.0 RESULTS

5.1 REGULATORY REVIEW

The results of the regulatory file search of the subject property documented the presence of the former No. 2 fuel oil UST. However, no other USTs or environmental concerns were identified on the subject property.

The results of the regulatory file search of the subject property neighborhood identified two properties in close proximity to the subject property where past releases of petroleum products have occurred. These properties include:

- the abutting Citgo/Jiffy Mart property (closed site #931500) to the northwest of the subject property, and
- the Ludlow Mobil Station property (active site #931500) located approximately 200 feet to the northeast of the subject property.

5.2 GEOLOGY

Comparison of logs recorded at test boring locations on the subject property indicate that the subsurface materials consist mainly of a coarse-grained stratified glacial drift deposit. This material is loosely consolidated, has a low proportion of silt and clay, and contains various sizes of sub-angular to semi-rounded cobbles and boulders. The saturated portion of the glacial drift deposit represents the overburden aquifer on the subject property.

5.3 SOIL SAMPLING

HSA measurements taken on each split-spoon sample in the soil borings ranged from none detected (ND) to 336.0 ppm. Analytical results for soil sample MW-1/SS-5 (9 to 10.5 feet) indicated TPHs at a concentration of 4,600 milligrams per kilogram (mg/kg). HSA readings in soil boring MW-2 ranged from ND to 13.5 ppm in sample SS-5 (13 to 15 feet). Analytical results for soil sample MW-2/SS-5 (13 to 15 feet) indicated TPH at a concentration of 170 mg/kg. Soil boring MW-3 HSA readings ranged from 18.0 to 32.0 ppm is soil sample SS-2 (4 to 6 feet). Analytical results for soil sample MW-3/SS-2 (4 to 6 feet) indicated TPH at a concentration of 350 mg/kg. Soil analytical results are tabulated in Table 4. Complete laboratory analytical results and chain-of-custody are included in Appendix D.

Two soil samples were collected for bacterial profiling for the purpose of identifying population of petroleum degrading bacteria. One soil sample, SB-2/SS-5 (9.0 to 10.5 feet), was collected from the soil boring located in the UST excavation. The second sample, SB-1/SS-4 (11.0 to 13.0 feet), was collected from one of the soil borings outside the UST excavation. Results of the analyses for soil samples collected indicate that there was a high probability that petroleum degrading bacteria were present in both samples.

5.4 GROUNDWATER SAMPLING

Free product was not observed during groundwater sampling. However, an oily sheen was observed on purge water from MW-1. Groundwater samples were collected from the newly installed monitoring well and analyzed for TPHs. Analytical results for the groundwater sample from MW-1 indicated TPH at a concentration of 19.0 mg/ℓ. TPH concentrations were not detected above laboratory reporting limits in the groundwater samples collected from MW-2 and MW-3. Groundwater analytical results are summarized in Table 5. Complete laboratory analytical results and chain-of-custody are included in Appendix D.

5.5 GROUNDWATER MEASUREMENTS

Water level measurements taken on December 28, 1994, from monitoring wells MW-1, MW-2 and MW-3 were converted to elevations as established from the elevation survey. Groundwater elevations were plotted and contoured to determine the direction of groundwater flow (Figure 2). The contours depict groundwater flow to the east-northeast. These contours are similar to those depicted in a report generated by Griffin International

Table 4
UNITED STATES POSTAL SERVICE
LUDLOW, VERMONT
SOIL ANALYTICAL DATA (EPA METHOD 418.1)

Soil Boring Designation	Depth (ft)[1]	Total Petroleum Hydrocarbons (mg/kg)[2]	Date Collected
MW-1	9.0 - 10.5	4,600	12-19-94
MW-2	13.0 - 15.0	170	12-20-94
MW-3	4.0 - 6.0	350	12-21-94

Notes:

1. Sample depth in feet below ground surface.
2. Sample concentrations in milligrams per kilogram (mg/kg).

Table 5
UNITED STATES POSTAL SERVICE
LUDLOW, VERMONT
GROUNDWATER ANALYTICAL DATA (EPA METHOD 418.1)

Monitoring Well Designation	Total Petroleum Hydrocarbons (mg/ℓ[1])	Date Collected
MW-1	19.0	12-28-94
MW-2	ND	12-28-94
MW-3	ND	12-28-94

Note:

1. Groundwater concentration in milligrams per liter (mg/ℓ).

dated February 1994 for the Ludlow Mobil Station. The groundwater contours generally reflect groundwater flow towards of the Black River.

5.6 SENSITIVE RECEPTOR SURVEY

The sensitive receptor survey revealed that there are no nearby drinking water supplies in the vicinity of the site. Also, the site is not within a WHPA.

Air monitoring conducted in the Post Office, 94 Main Street building basement and the Ludlow Town Municipal Building basement did not indicate the presence of elevated volatile organic compounds (VOCs) or combustible gases. Soil staining or fuel oil odors were not observed in the building basements.

No evidence of floating product or a sheen was observed on either Jewell Brook or the Black River. No VOCs were detected with a PID in the onsite catch basin.

6.0 SUMMARY AND CONCLUSIONS

In summary, three monitoring wells were installed at the Ludlow Post Office site. Difficult drilling conditions were encountered at each location because of the glacial drift deposits beneath the site consisting of cobbles and boulders. One of the monitoring wells was installed in the UST excavation and the other two wells were installed outside of the UST excavation. A downgradient monitoring well location could not be selected due to onsite physical constraints. The monitoring well locations were selected on the basis of anticipated groundwater flow to the north towards the Black River. However, actual groundwater flow direction as determined from onsite monitoring wells is to the northeast.

Furthermore, eleven (11) attempts to install additional soil borings in the vicinity of the former UST were performed to determine the extent of fuel oil contamination. However, difficult drilling conditions prevented the completion of these borings.

A regulatory review was conducted for the site and adjacent properties. No environmental concerns were identified for the Post Office site. Two nearby locations were identified where petroleum contamination is documented. One location, Ludlow Jiffy Mart/Citgo Station, abuts the property to the west. The second location, Ludlow Mobil Station, is located to the northwest across Main Street.

Field screening of soils during installation of the borings outside the UST excavation indicated the presence of low to moderate concentrations of VOCs (ND to 32 ppm). Field screening of soils during installation of the boring inside the UST excavation indicated the

presence of elevated concentrations of VOCs (ND to 336 ppm). In addition, a petroleum odor and soil staining were observed in samples collected at and below the water table in this soil boring. Low concentrations of TPHs (170 to 350 mg/kg) were detected in soil samples collected in the two soil borings outside of the UST excavation. Elevated concentrations of TPHs (4,600 mg/kg) were detected in a soil sample collected at the water table in the soil boring in the UST excavation.

Two soil samples were submitted for identification of petroleum degrading bacterial populations. Results of the analysis for soil samples collected indicate that there was a high probability that petroleum degrading bacteria were present in both samples.

No TPHs were detected in groundwater samples collected in monitoring wells outside the UST excavation. Elevated concentrations of TPHs (19.0 mg/ℓ) were detected in a groundwater sample collected from the monitoring well inside the excavation.

Groundwater measurements were taken, a monitoring well survey was conducted and a groundwater contour map was generated. Groundwater flow is indicated as being from southwest to northeast across the site.

The sensitive receptor survey conducted did not reveal any impact to adjacent and nearby downgradient building basements. In addition, there are no drinking water supply wells onsite or in the Village of Ludlow.

Based upon the results of the initial site investigation findings, Wehran EMCON has concluded the following:

1. Soils in the immediate vicinity of the former leaking 1,500 gallon No. 2 fuel oil UST have been impacted. However, due to the close proximity of the UST in relation to the Post Office building, delineation of potential impacted soil beneath the Post Office building could not be confirmed. Furthermore, the extent of soil contamination in the immediate vicinity south and west of the former UST could not be adequately determined due to shallow soil boring refusal at 8 locations.

   The sources of the low TPH concentrations in the two soil borings installed outside of the UST excavation do not appear to be related to the former leaking UST due to the distance and upgradient location of these borings in relation to the UST.

2. Groundwater in the immediate vicinity of the former leaking UST has been impacted. However, no separate phase floating layer of petroleum product was observed other than an oily sheen on the water surface. No TPHs in

groundwater were detected in the two upgradient monitoring wells installed outside of the UST excavation area (upgradient and cross-gradient with respect to groundwater flow). The downgradient extent of groundwater contamination could not be determined due to the close proximity of the Post Office building and other physical constraints.

3. No sensitive receptors identified during this investigation have been impacted by the documented release of fuel oil to the soil and groundwater at the Post Office site.

Based on the above conclusions, it does not appear that removal of the contaminated soil is a feasible option because:

- There has been no impact to sensitive receptors identified.
- The close proximity of the Post Office building to contaminated soil.
- The majority of contamination is likely at or beneath the water table.
- Potential interference with Post Office operations.
- The site is paved, therefore, exposure to contaminated soil is limited;
- There is insufficient space for onsite treatment of contaminated soil.
- The VTDEC has no TPH soil "Action Levels"

Furthermore, it does not appear necessary to implement corrective actions at this time. This is because:

- No impact to sensitive receptors have been identified.
- No separate phase product was identified in the source area.
- No drinking water sources exist on or in the vicinity of the subject site.

7.0 REFERENCES

Town of Ludlow Assessor's office records, reviewed by Wehran personnel, December 20 and 21, 1994.

Tow of Ludlow Planning and Zoning Department records, reviewed by Wehran personnel on December 20 and 21, 1994.

U.S. Environmental Protection Agency (USEPA) Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS), October 17, 1994.

USEPA Resource Conservation and Recovery Act (RCRA) Generators, Treatment, Storage and Disposal Index, December 15, 1994.

U.S. Geological Survey (USGS) 7.5 Minute Topographic Quadrangle Map, Ludlow, Vermont (1968).

USGS and Vermont Department of Water Resources, Groundwater Favorability Map of the Ottauquechee-Saxtons River Basin, Vermont, 1968.

USGS, Vermont Geological Survey, 1972.

Vermont Department of Environmental Conservation (DEC) Hazardous Sites List, September 8, 1994.

Vermont DEC, telephone interview with Bill Barre by Wehran personnel on January 3, 1995.

Vermont DEC Oil and Hazardous Materials Spill/Release List, reviewed by Wehran personnel on December 23, 1994.

Vermont DEC, telephone interview with Bob Haslam by Wehran personnel on December 29, 1994.

Vermont DEC pulled UST Facilities List, June 10, 1994.

Vermont DEC Underground Storage Tank Facilities List, December 12, 1994.

Wehran Engineering, UST Removal Documentation Report, November 1994.

APPENDIX A
WEHRAN EMCON TANK CLOSURE REPORT DATED NOVEMBER 2, 1994

TANK CLOSURE DOCUMENTATION

198 MAIN STREET

LUDLOW, VERMONT

Prepared For

UNITED STATES POSTAL SERVICE

Windsor, Connecticut

November 1994

WEHRAN EMCON NORTHEAST

Burlington, Vermont

Environmental Engineers • Scientists • Constructors

Wehran EMCON
Northeast

Wehran Engineering Corporation
1 Mill Street, Box B15
Burlington, VT 05401-1530
Tel: (802) 658-6884
Fax: (802) 658-5014

November 2, 1994

Mr. Marc Coleman
Vermont Department of Conservation
Hazardous Materials Management Division
103 Main Street West Building
Waterbury, VT 05671

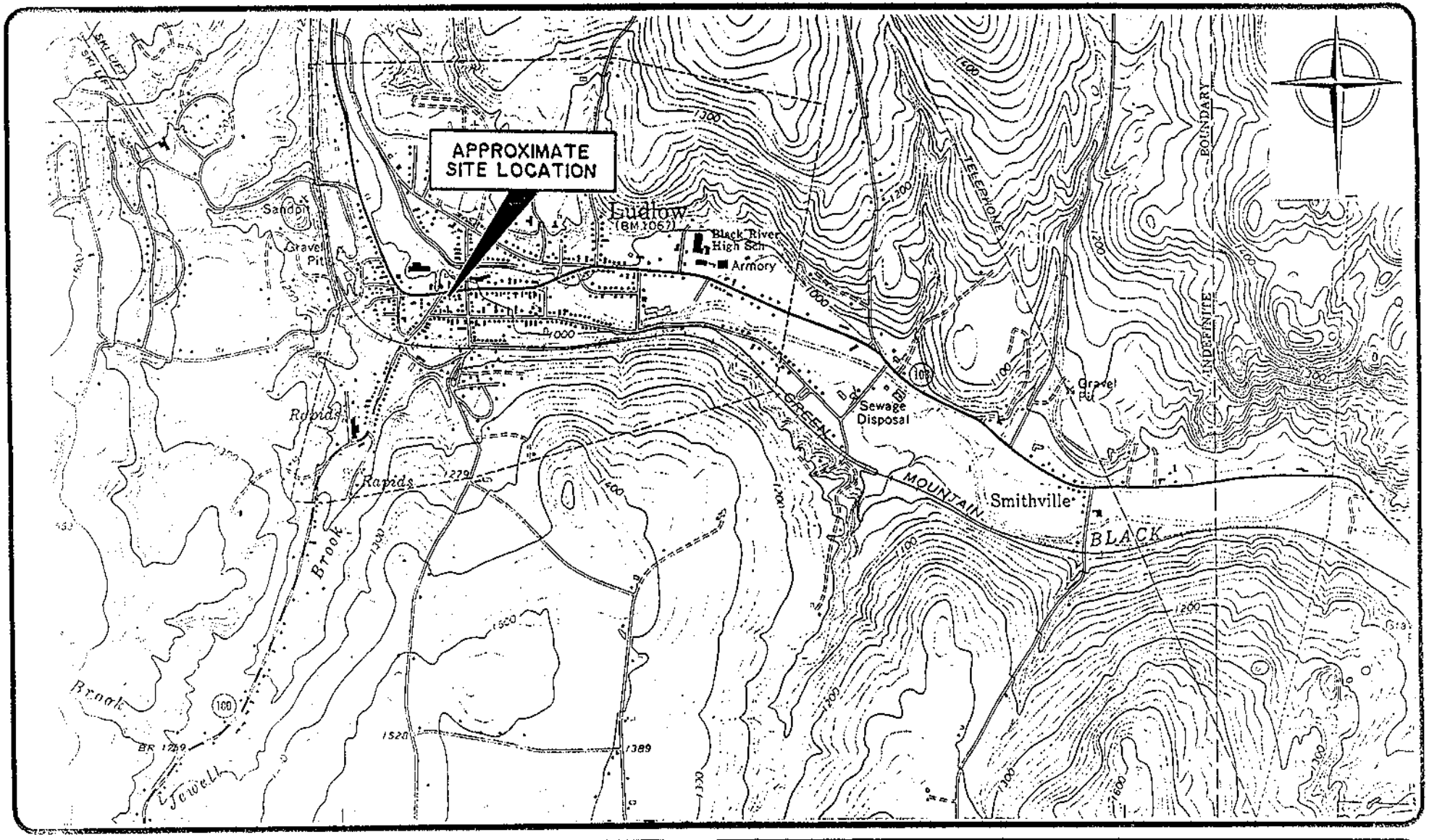
Re: Tank Removal Oversight, Ludlow, Vermont
UST Facility ID No. 2286
Wehran Project No. 04722.01

Dear Mr. Coleman:

Wehran Engineering Corporation (Wehran) has provided oversight for the removal of a 1,500 gallon No. 2 fuel oil underground storage tank (UST) at the United States Postal Service (USPS) facility at 198 Main Street in Ludlow, Vermont (see Figure 1 Site Location Map). The USPS leases the subject property from Mark Gauthier and Steve Lorentz of Ludlow, Vermont. The results of Wehran's oversight activities are documented herein. The Vermont Department of Environmental Conservation (VTDEC) closure forms, site diagram and tank removal checklist are included in Attachment A.

On October 6, 1994, the VTDEC was notified of the tank closure scheduled October 21, 1994. The closure was later rescheduled with the VTDEC for October 20, 1994 and the VTDEC approved the change. The UST was removed by Cyn Environmental Services of South Boston, Massachusetts. The UST was used for storage of No. 2 fuel oil used in operating a furnace to heat the building. A new 500 gallon above ground tank has been installed as replacement.

The UST was located approximately 7 feet south of the southwest corner of the building. The ground in this area is paved and nearly level. The site is abutted to the north by Main Street. To the north, across Main Street are commercial businesses. The Black River is ±400 feet north of the site. The site is abutted to the west by a mini-mart/gas station. Further west is Andover Street and approximately 250 feet to the west of the site is Jewell Brook, a small tributary stream to the Black River. A commercial business and the Ludlow Town Hall/Police Department abut the property on the east



Wehran EMCON
Northeast
Wehran Engineering Corp.

DATE 10/21/9
DWN. EJM
APPR. NPN
REVIS.
PROJECT NO.
04722.01

SITE LOCATION MAP
UNITED STATES POSTAL SERVICE
LUDLOW , VERMONT

and residences abut the property to the south. The Ludlow Village is served by a municipal water supply system.

Prior to excavation activities, utility line locations were cleared to the extent possible and Digsafe was notified. The contents of the tank (approximately 100 gallons) was removed on October 20, 1994 and transferred to the newly installed above ground tank onsite.

Wehran prepared a site-specific health and safety plan detailing the potential health hazards, personal protective equipment and emergency information. As an initial task, Wehran conducted a pre-work meeting with Cyn Environmental personnel to discuss project health and safety issues and a general work plan for the tank removal.

Work for the tank removal was conducted in accordance with Wehran standard operating procedures for UST closure (July 1991) which incorporates guidelines outlined in the VTDECs Guidelines for handling petroleum contaminated soil.

During excavation of soils from around the UST, Wehran personnel screened the soils using the jar headspace analysis (HSA) method with a portable photoionization detector instrument. The PID was calibrated with an isobutylene standard prior to beginning work. Approximately 5 cubic yards of soil removed from around the top of the UST. The volatile organic compounds (VOCs) in these soils ranged between 8.9 and 9.7 parts per million (ppm).

The UST piping consisted of (2) 1/2-inch diameter soft copper supply and return lines, a 3-inch diameter galvanized steel vent line and a 3-inch diameter remote fill line. Both lines went to the building. The supply and return lines were cut, drained, crimped and removed. The remote fill and vent pipes were also removed. The top of the tank was approximately 3 feet below ground surface (bgs).

Excavation continued to remove the UST. Gray, stained soil was observed on the south side of the excavation and HSA readings ranged between 39.7 and 47.0 ppm. Five cubic yards of this soil was segregated.

The tank was then purged and cleaned by Cyn Environmental. Approximately 50 gallons of liquid was removed with a vacuum truck. A uniform hazardous waste manifest is included in Appendix B.

The UST was removed from the excavation and visually inspected. The tank was of single-wall steel construction, reportedly installed in 1964. The tank was rusted and

appeared wet on the bottom. Several small holes were observed in the east bottom end of the tank. The tank was removed from the site for disposal. A tank disposal receipt will be forwarded when available.

HSA was conducted on two soil samples taken from the bottom of the excavation and measured 98.2 and 97.2 ppm. Excavation continued in an attempt to removal all of the potentially contaminated soil. An additional 3 cubic yards of soil was removed. Soil excavation/segregation was discontinued due to structural concerns of the proximity of the building foundation, concrete sidewalk and nearby loading dock. Additionally, a large concrete hold down pad remained in the bottom of the excavation and could not be removed with available equipment.

The soils in the excavation consisted primarily of medium to coarse sand and medium to coarse gravel with many large cobbles. Groundwater was not encountered. A slight fuel oil odor was observed. The excavation measured 23 feet long by 12 feet wide by 9 feet deep. Photographs of the tank and excavation are included in Attachment C.

HSA readings taken from soils in the excavation were as follows:

Sample No.	Location	Headspace (ppm)
1	Northwest Sidewall	124.0
2	Northeast Sidewall	112.0
3	East Sidewall	48.6
4	Southeast Sidewall	95.6
5	Southwest Sidewall	52.4
6	West Sidewall	97.2
7	East Bottom	112.0
8	West Bottom	80.2

Ted Unkles of the VTDEC Sites Management Section (SMS) was contacted and informed of the status of the tank removal. After conferring with the VTDEC, the Postal Service and the contractor, a decision was made to return the segregated soil to the excavation because additional investigation would likely be required at this site before taking remedial action.

The excavation was backfilled and compacted with the soil removed and a 7 cubic yard load of imported sand and gravel fill.

Prior to backfilling, confirmatory composite soil samples were collected from the sidewalls and bottom of the excavation. The samples were labeled, placed on ice in a shipping cooler and accompanied by a chain-of-custody form. The samples were shipped to Alpha Analytical Laboratories in Westborough, Massachusetts and analyzed for hydrocarbon scan by gas chromatograph (GC) Method 8100M. Analytical results will be forwarded to the VTDEC when available. A completed chain-of-custody form is included in Attachment D.

In summary, approximately 8 cubic yards of soil was segregated and stockpiled, but subsequently backfilled in the excavation. Based on the field screening of soils, the condition of the tank and inspection of the excavation, it is apparent that subsurface soil contamination is present. The extent of the contamination is not presently known.

In conclusion, further investigation/remedial activities are warranted to determine the degree and extent of contamination at this site.

If you have any questions or require additional information, please do not hesitate to contact us.

Sincerely,

WEHRAN ENGINEERING CORPORATION

Eugene J. Martin
Task Manager

Nicholas P. Nowlan, P.E.
Project Manager

EJM/NPN/atd

Attachment(s)

ATTACHMENT A
VTDEC TANK CLOSURE FORM
TANK REMOVAL CHECKLIST

PSL
10-21-94

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
UNDERGROUND STORAGE TANK PROGRAM
103 SOUTH MAIN STREET
WATERBURY, VERMONT 05671-0404
(802) 244-8702

Date of Removal: 10-20-94 Date of Assessment: 10-20-94
Person & Company Doing Assessment: EUGENE J. MARTIN/WEHRAN ENGON NORTHEAST BURLINGTON, VT.
Telephone Number: (802)658-6884

Business Name Where Tank(s) Located: U.S POST Office, Ludlow
Number of Employees: 10 ±
Street Address & Town/City: MAIN STREET LUDLOW, VERMONT
Owner of Tank(s): ~~UNITED STATES POSTAL SERVICE~~ MARK GAUTHIER
Address: RR#1 Box 1430 Contact Person: MARK GAUTHIER
Town/City: LUDLOW, VERMONT 05149-9741 Phone Number: (802) 228-2300

UST Facility ID Number: 2286

Tank #	Product	Size	Condition
1	#2 FUEL OIL	1500 GALLONS	POOR
2			
3			
4			

Reason for Tank Removal (check one): ☐ abandoned ☒ routine replacement
☐ tank or piping leaking ☒ liability
Replacement Tank(s)? ☒ yes ☐ no Number of Replacement Tanks: (1) 500 GAL. TANK ABOVE GROUND
DEC UST Permit(s) Obtained? ☒ yes ☐ no
DEC-Permitted Tank(s) Still On-Site? ☐ yes ☒ no Number of Tanks: NA
Out of Service Tank(s) On-Site? ☐ yes ☒ no Number of Tanks: NA
Heating Oil Tank(s) On-Site? ☒ yes ☐ no No. of Tanks: 1 Size(s): NEW 500 GAL. ABOVE GROUND

Any Waste Pumpage? ☒ yes ☐ no Estimated Volume: 50 GALLONS
Transported By: CYNN ENVIRONMENTAL INC. BOSTON, MA.

Size of Excavation (ft²): 276 Depth: 9' Soil Type: SAND AND GRAVEL
Concentrations Detected with PID: Peak = 124.0 ppm Average = 10.2 ppm
Type of PID: MSA PHOTON 10.6 eV LAMP
Number of Readings (please put locations on attached drawing): 14 READINGS
Calibration Info. (date, time, type of gas): 10-20-94 9:30 A.M. W/ 100 PPM ISOBUTYLENE
Free Phase Product Encountered? ☐ yes ☒ no Approx. Amount: NA
Cont. Soils Stockpiled? ☐ yes ☒ no Amount (yd³): _____
Cont. Soils Backfilled? ☒ yes ☐ no Amount (yd³): ± 68

Groundwater Encountered? ☐ yes ☒ no Depth to Groundwater: UNKNOWN
Monitoring Wells Installed? ☐ yes ☒ no Number: NA Screen Depth: NA

On-Site Drinking Well? ☐ yes ☒ no [if yes: ☐ rock ☐ gravel ☐ spring]
Public Water Supply Well(s) Within ½ Mile? ☐ yes ☐ no UNKNOWN
Distance to nearest: UNKNOWN
Private Water Supply Well(s) Within ½ Mile? ☐ yes ☐ no How Many? UNKNOWN

Samples Collected for Laboratory Analysis? ☒ yes ☐ no How Many? 2
[check all that apply: ☒ soil ☐ groundwater ☐ drinking water]

Receptors Affected (check all that apply):
☒ soil ☐ residential; # of houses/people: _____
☐ groundwater ☐ surface water; name/type of water body: _____

Signature of Owner or Authorized Representative: Gail W. Hurst POSTMASTER
Date: 10-20-94
Signature of Person Performing Site Assessment: Eugene J. Martin WEHRAN/ENGON
Date: 10-20-94

*** ATTACH OBSERVATIONS, CONCLUSIONS, AND DRAWING ON A SEPARATE PAGE ***

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
UNDERGROUND STORAGE TANK PROGRAM
TANK PULL FORM

TODAY'S DATE: 10-20-94

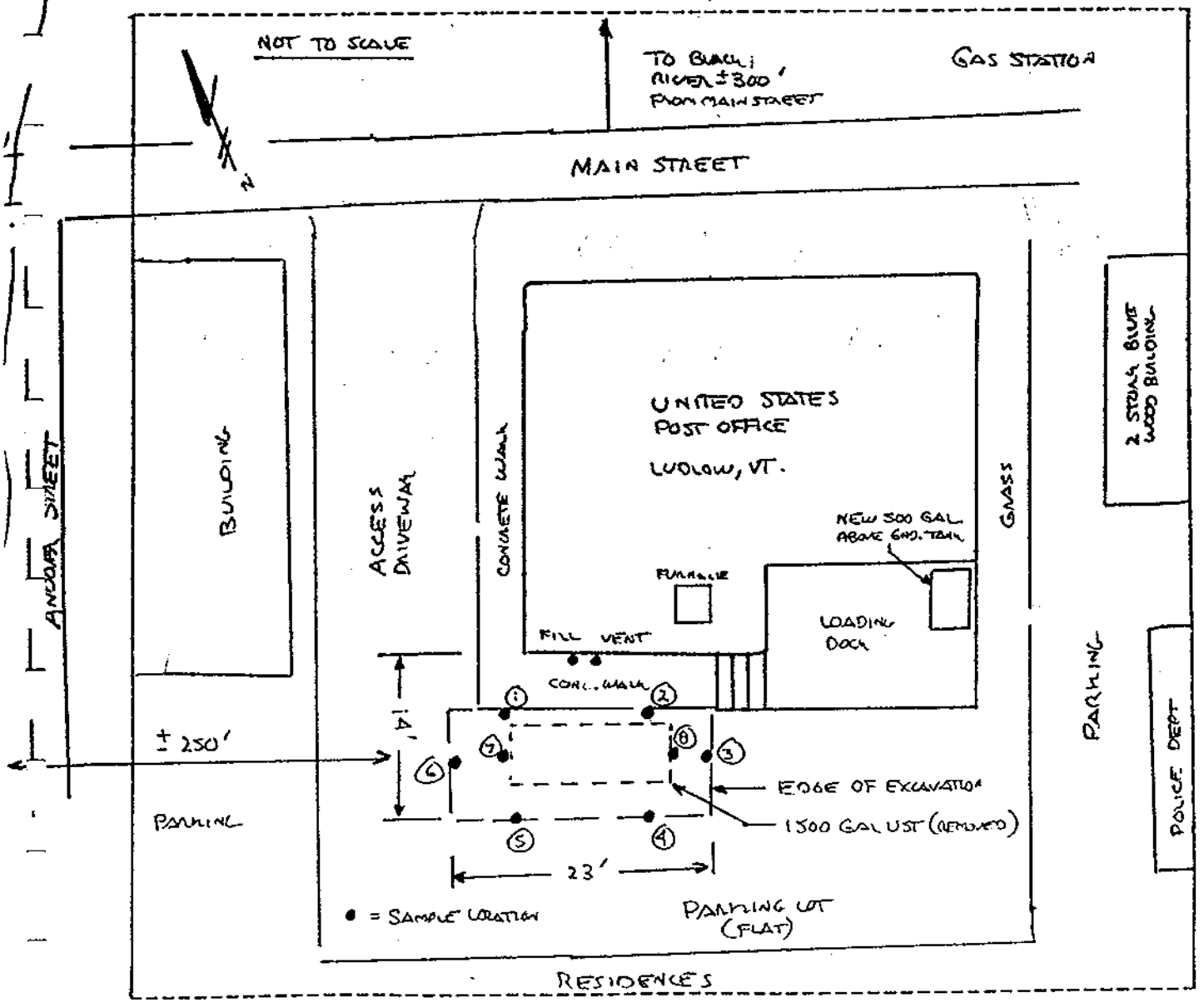
INSPECTOR: EUGENE MARTIN / WEHMAN EMCON

DATE OF REMOVAL:

BUSINESS NAME: UNITED STATES POSTAL SERVICE
LUDLOW, VERMONT

SITE DIAGRAM

Show location of all tanks and distance to permanent structures, sample points, areas of contamination and any pertinent site information. Indicate North arrow and major street names or route number.



① 124.6
② 112.6
③ 48.6
④ 95.6
⑤ 52.4
⑥ 97.2
⑦ 112.0
⑧ 80.2

+ 6 READING FROM SOIL REMOVED FROM EXCAVATION

USPS Ludlow, Vermont

TANK REMOVAL CHECKLIST

FACILITY ADDRESS: 198 Main Street, Ludlow, Vermont

REMOVAL DATE: 10/24/94

WEATHER CONDITIONS: Overcast, light rain, 60° F

TANK IS EMPTY AND ACCESSIBLE: YES X NO ____

PRESENCE OF UNDERGROUND UTILITY LINES: Storm line CB located 10' SW of tank; line location unknown, likely to run to lines in Main Street

METAL DETECTOR	YES:	____	NO:	X
CABLE LOCATION	YES:	____	NO:	X
GPR	YES:	____	NO:	X

REMOVAL CONTRACTOR: Cyn Environmental, Boston, MA

TANK PERMITS REMOVAL NO.: VTDEC notified in advance DISPOSAL NO: NA

MANIFEST INFORMATION: Yes, attached with report.

ONSITE PERSONNEL: Cyn-Leo, 3 other persons STATE/LOCAL: None

OTHERS: U.S. Postal Service: Postmaster WEHRAN: Eugene J. Martin

TANK INFORMATION: TANK NO.: 1 LOCATION: Adjacent to southwest corner of building

DESIGN: Single wall steel CAPACITY: 1,500 gallons USAGE: Heating

CONTENTS: No. 2 fuel oil PIPING MATERIALS: 1/2" soft copper supply and return; galvanized steel vent, 3" galvanized steel fill (remote)

CONDITION OF TANK REMOVED: Poor, small holes in bottom

ITEMS ABANDONED IN PLACE: Concrete pad in bottom of excavation

EXCAVATION INFORMATION: ____ DIMENSIONS: 12' x 23' x 9' deep

PRESENCE OF GROUNDWATER	YES:	____	NO:	X
SHEEN/OIL IN WATER	YES:	____	NO:	X
DEWATERING NECESSARY	YES:	____	NO:	X

IS SHORING OF EXCAVATION NECESSARY/RECOMMENDED: YES ____ NO X

DETAILED DESCRIPTION OF BACKFILL MATERIALS AND PROCEDURE:

Backfilled and compacted with soil removed from excavation and imported sand and gravel fill.

TANK REMOVAL CHECKLIST (Cont'd)

SOIL ANALYSIS: EQUIPMENT USED FOR FIELD OBSERVATIONS: MSA Photon with 10.6 eV lamp calibrated to 100 ppm isobutylene/MSA model 260 0_2/LEL calibrated with pentane

Sample No.	1	Sample Location:	Northwest sidewall	Headspace:	124.0 ppm
Sample No.	2	Sample Location:	Northeast sidewall	Headspace:	112.0 ppm
Sample No.	3	Sample Location:	East sidewall	Headspace:	48.6 ppm
Sample No.	4	Sample Location:	Southeast sidewall	Headspace:	95.6 ppm
Sample No.	5	Sample Location:	Southwest sidewall	Headspace:	52.4 ppm
Sample No.	6	Sample Location:	West sidewall	Headspace:	97.2 ppm
Sample No.	7	Sample Location:	East bottom	Headspace:	112.0 ppm
Sample No.	8	Sample Location:	West Bottom	Headspace:	80.2 ppm

(* = N, S, E, W, Sidewall, Bottom)

GENERAL SOIL DESCRIPTION: TYPE: Med. brown, coarse sand & gravel, many cobbles

DRY/WET: Dry STAINING COLOR: Gray to black staining in bottom of excavation

ODOR: Slight fuel oil odor

SIDEWALL GEOLOGICAL COMPOSITION: 0"-4" pavement, 4"-9" coarse sand and gravel, rust colored staining at 3' to 5' below ground surface; many large cobbles.

DESCRIPTION OF DESIRED/REQUIRED RESTORATION TO BE PERFORMED:
Backfill, compaction, re-pave, plug holes in concrete wall where vent and fill pipes were

PICTURES ATTACHED AND LABELED: YES X NO

ATTACHMENT B
HAZARDOUS WASTE MANIFEST

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE
One Winter Street
Boston, Massachusetts 02108

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator US EPA ID No. [illegible] Manifest Document No. [illegible]
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address U.S. Post Office Facilities Service Office [illegible]
4. Generator's Phone ( ) [illegible]

A. State Manifest Document Number MA H393332
B. State Gen. ID [illegible]

5. Transporter 1 Company Name CYN OIL CORPORATION
6. US EPA ID Number MAD082303777
C. State Trans. ID [illegible] MA
D. Transporter's Phone (617) 344-0265

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Trans. ID
F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
CYN OIL CORPORATION
1771 WASHINGTON STREET
STOUGHTON, MA 02072
10. US EPA ID Number MAD082303777
G. State Facility's ID Not Required
H. Facility's Phone (617) 344-0265

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. WASTE PETROLEUM OIL COMBUSTIBLE LIQUID UN 1270 PG III	001	TT	150	G	MA01
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.)
a. b. c. d.

K. Handling Codes for Wastes Listed Above
a. b. c. d.

15. Special Handling Instructions and Additional Information
24 HOUR EMERGENCY SPILL RESPONSE 617-344-0265
D.O.T. EMERGENCY GUIDE NO. 27

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Date Month Day Year
[illegible]	[illegible]	[illegible]

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year
[illegible]	[illegible]	[illegible]

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Date Month Day Year

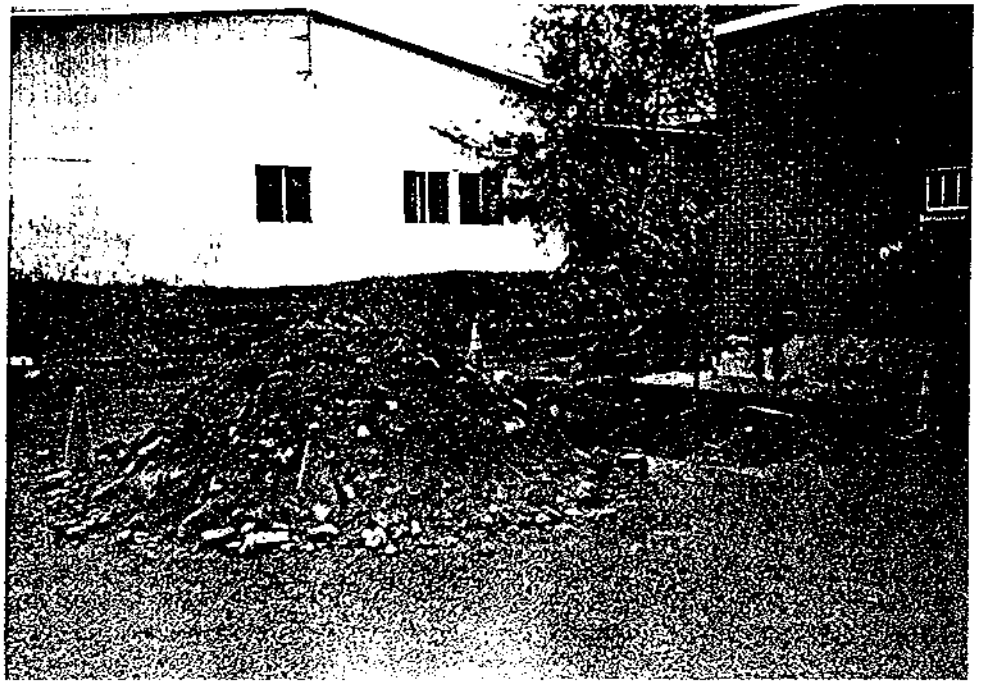
In case of emergency or spill, immediately call the National Response Center 1-800-[illegible]-88

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY>A: GENERATOR RETAINS

ATTACHMENT C
PHOTOGRAPHS

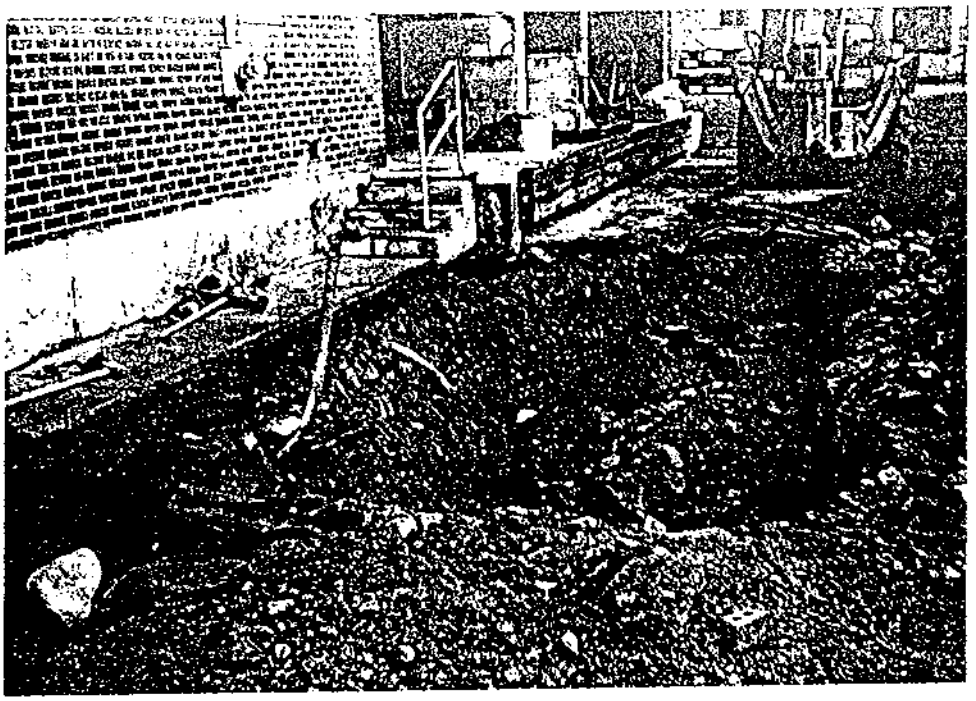
Location of 1,500 Gallon No. 2 fuel oil UST excavation



1,500 Gallon No. 2 fuel oil UST excavation

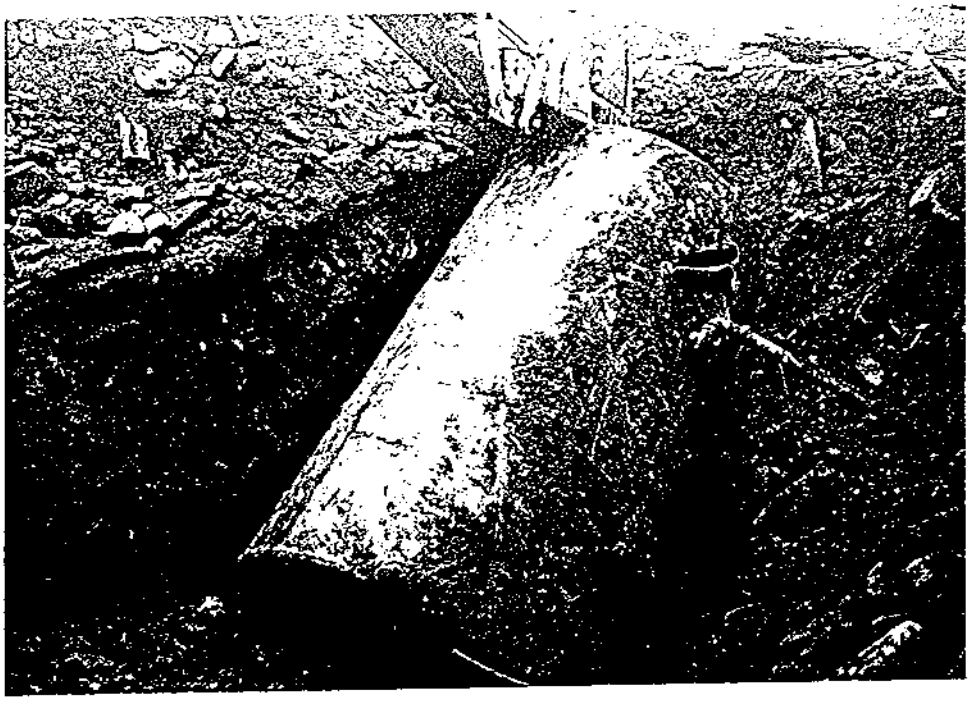
1,500 Gallon No. 2 fuel oil excavation

1,500 Gallon No. 2 fuel oil UST excavation,
Top of UST



1,500 Gallon No. 2 fuel oil UST excavation.

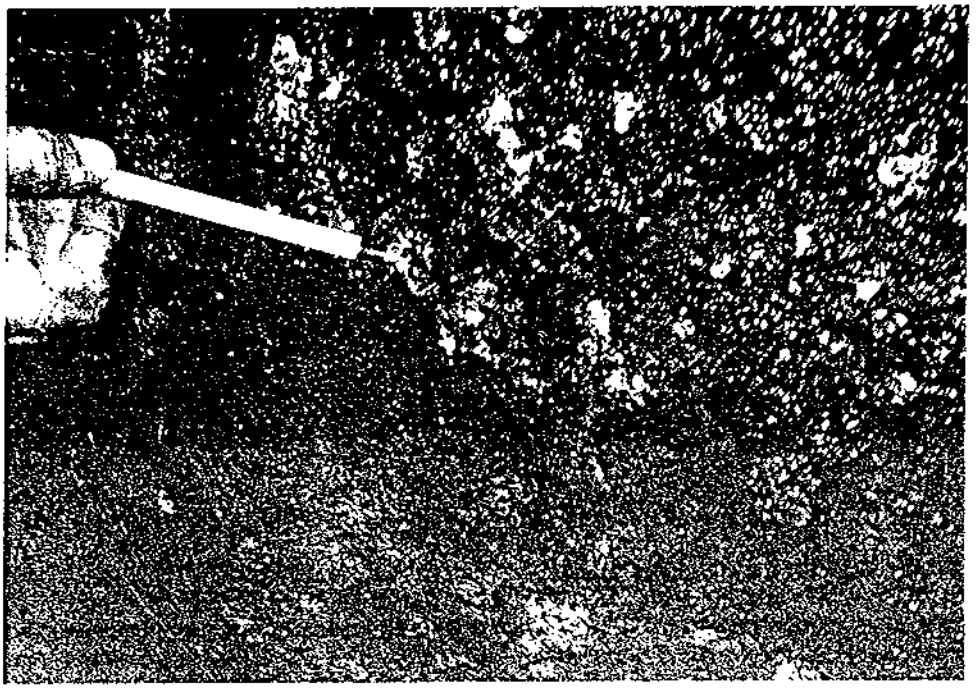
1,500 Gallon No. 2 fuel oil UST excavation



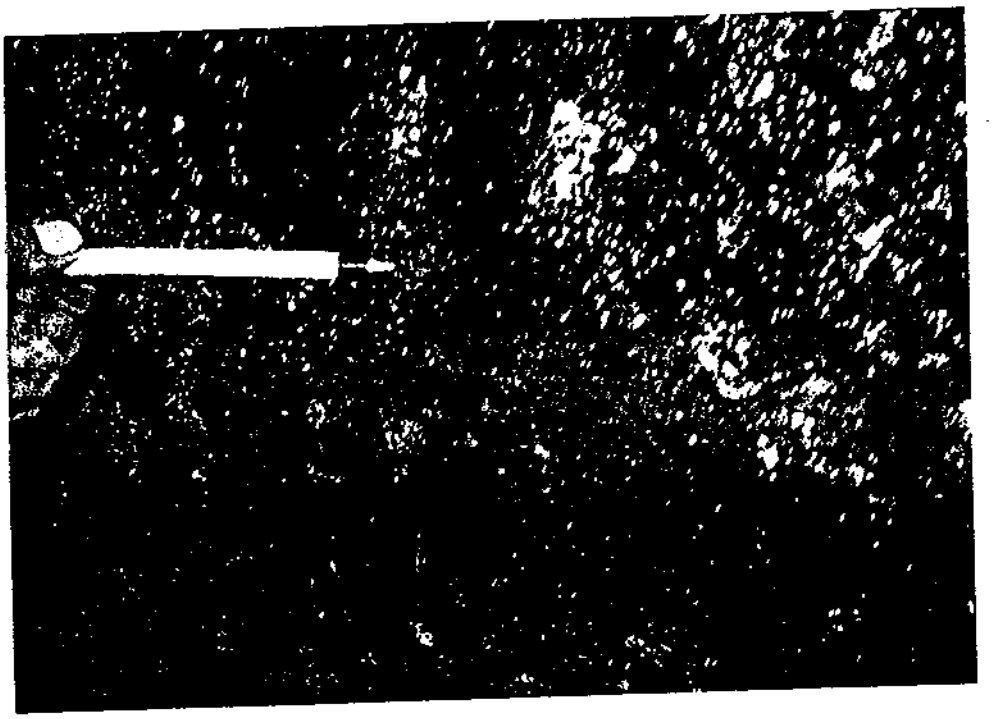
1,500 Gallon No. 2 fuel oil tank being removed.

1,500 gallon No. 2 fuel oil tank being removed.

1,500 gallon No. 2 fuel oil tank after removal.



Small holes in 1,500 gallon No. 2 fuel oil tank.



Small holes in 1,500 gallon No. 2 fuel oil tank.

ATTACHMENT D
ANALYTICAL RESULTS

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

CERTIFICATE OF ANALYSIS

Client: Wehran Engineering

Address: Chace Mill Box B15
1 Mill Road
Burlington, VT 05401

Attn: Eugene J. Martin

Project Number: 04722-01

Site: USPS

Laboratory Job Number: L9408751

Invoice Number: 68267

Date Received: 24-OCT-94

Date Reported: 07-NOV-94

Delivery Method: Fed ex

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L9408751-01	#1 SIDEWALLS	Ludlow, VT
L9408751-02	#2 BOTTOM	Ludlow, VT

Authorized by: _____

Scott McLean - Laboratory Director

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9408751-01
#1 SIDEWALLS
Sample Matrix: SOIL

Date Collected: 20-OCT-94
Date Received : 24-OCT-94
Date Reported : 07-NOV-94

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1 Glass

PARAMETER	RESULT	UNITS	REF	METHOD	DATES PREP	DATES ANALYSIS
Solids, Total	91.	%	3	2540B		01-Nov
Hydrocarbon Scan GC 8100 Modified			1	8100M	25-Oct	28-OCT
Mineral Spirits	< 100	mg/kg				
Gasoline	< 100	mg/kg				
Fuel Oil #2/Diesel	870	mg/kg				
Fuel Oil #4	< 100	mg/kg				
Fuel Oil #6	< 100	mg/kg				
Motor Oil	< 100	mg/kg				
Kerosene	< 100	mg/kg				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9408751-02
#2 BOTTOM
Sample Matrix: SOIL

Date Collected: 20-OCT-94
Date Received : 24-OCT-94
Date Reported : 07-NOV-94

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1 Glass

PARAMETER	RESULT	UNITS	REF	METHOD	DATES PREP	DATES ANALYSIS
Solids, Total	92.	%	3	2540B		01-Nov
Hydrocarbon Scan GC 8100 Modified			1	8100M	25-Oct	28-OCT
Mineral Spirits	< 100	mg/kg				
Gasoline	< 100	mg/kg				
Fuel Oil #2/Diesel	1400	mg/kg				
Fuel Oil #4	< 100	mg/kg				
Fuel Oil #6	< 100	mg/kg				
Motor Oil	< 100	mg/kg				
Kerosene	< 100	mg/kg				

Comments: Complete list of References and Glossary of Terms found in Addendum I

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. 1986.

3. Standard Methods for Examination of Water and Waste Water. APHA-AWWA-WPCF. 17th Edition. 1989.

GLOSSARY OF TERMS AND SYMBOLS

< Indicates analyte not detected at stated value, i.e. Reporting Detection Limit.

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

[illegible] # 44 [illegible]

ALPHA Analytical Laboratories, Inc.	Eight Walkup Drive Westborough, MA 01581-1019 508-898-9220 FAX 508-898-9193	**CHAIN OF CUSTODY RECORD** and ANALYSIS REQUEST RECORD	No. 19461 Sheet 1 of 1

Company Name: WEHRAN EMCON	Project Number: 04722.01 P.O. Number: 31302	Project Name/Location: USPS LUDLOW, VERMONT	Date Received in Lab: 10/24	Date Due: STANDARD 11/7
Company Address: CHACE MILL BOX B15 BURLINGTON, VT. 05401	Phone Number: (802) 658-6884 FAX No.: 658-5014	Project Manager: EUGENE J. MARTIN	Alpha Job Number: (Lab use only) 9408751	

Container Codes: P = Plastic V = Vial C = Cube G = Glass A = Amber Glass B = Bacteria Container O = Other

MATRIX / SOURCE CODES: MW = Monitoring Well RO = Runoff O = Outfall W = Well LF = Landfill L = Lake/Pond/Ocean I = Influent E = Effluent DW = Drinking Water R = River Stream S = Soil SG = Sludge B = Bottom Sediment X1 = Other X2 = Other

ALPHA Lab # (Lab Use Only)	Sample I.D.	Containers (number/type)	Matrix / Source	Unpres.	Ice	Nitric	Sulfuric	HCl	Other	Solubles - F.F.	Date	Time	Analysis Requested
8751.1	#1 SIDEWALLS	1 / GLASS	S	X	X						10/20	1:00 P.M.	EPA 8100M (TS)
.2	#2 BOTTOM	1 / GLASS	S	X	X						10/20	1:00 P.M.	EPA 8100 M (TS)

Sampler's Signature	Affiliation	Date	Time
Eugene J. Martin	WEHRAN EMCON	10/20	4:30 PM

ADDITIONAL COMMENTS:
SAMPLES TAKEN FROM 1500 GALLON # 2 FUEL OIL UST EXCAVATION
HSA = 40-120 PPM

NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	Eugene J. Martin FedEx 10-20-94	Johnson	10/24	1030
2				
3				
4				

APPENDIX B
FILE REVIEW DATA

REGISTERED UST FACILITIES
PULLED UST FACILITIES
ACTIVE HAZARDOUS WASTE SITES
CLOSED HAZARDOUS WASTE SITES
SPILLS DATA BASE

Facility ID#	Hazardous Sites ID#	Facility Name	Facility Address	Facility Town	Perm
1108	931555	LUDLOW MOBIL	195 MAIN STREET	LUDLOW	98
967		LUDLOW TOWN GARAGE	WEST HILL	LUDLOW	97E
1503		MINTZER BROTHERS, INC.	DEAN R. BROWN INDUSTRIAL AVENUE	LUDLOW	97
2282481		PLUTA RESIDENCE	4 ORION AVENUE	LUDLOW	
1793		SOLITUDE GARAGE	OKEMO ACCESS ROAD	LUDLOW	99
2289911		TELEPHONE OFFICE	111 MAIN STREET	LUDLOW	
2056		THE MILL	145 MAIN STREET	LUDLOW	
2286		U.S. POST OFFICE	198 MAIN STREET	LUDLOW	
306		VAOT LUDLOW GARAGE	HIGH STREET	LUDLOW	96
2221		GILMAN MIDDLE SCHOOL	COMMERCIAL AVENUE	LUNENBURG	
2062		LUNENBURG VARIETY$	ROUTE 2	LUNENBURG	97
282		VAOT LUNENBURG GARAGE	TOWN HIGHWAY 15 ROUTE 2	LUNENBURG	96
1392		BARRY, JOHN C. AND ELAINE C.	TOWN HIGHWAY 31	LYNDON	
2280		BONA REALTY BLOCK	21 DEPOT STREET	LYNDON	
286		CALEDONIA COUNTY AIRPORT	PUDDING HILL ROAD	LYNDON	96
458		CALKINS REDI-MIX CONCRETE INC.	MEMORIAL DR. - ROUTE 5	LYNDON	94
2230		CHANGING SEASONS MOTOR LODGE	ROUTE 5	LYNDON	
6269813		CUMBERLAND FARMS, INC. #4011	BROAD STREET ROUTE 5	LYNDON	97P5
2163		FORDHAM'S MOBIL	ROUTE 5	LYNDON	96
6268108		FORMER NORTHERN TIRE	ROUTE 5	LYNDON	97
62		JON'S AUTOMOTIVE	ROUTE 5	LYNDON	96
2398		LYNBURKE MOTEL	JUCTION US ROUTE 5 & VT ROUTE 122	LYNDON	
2324		LYNDON MEADOWS	ROUTE 122, LYNDON CENTER	LYNDON	
2323		LYNDON TERRACE	ROUTE 5 AND ROUTE 63	LYNDON	
190		LYNDON TEXACO	121 MAIN STREET	LYNDON	96
5923484		LYNDON WARD, CHURCH OF J.C.LD.SAINTS	RT. 5	LYNDON	
6269311	770015	MARDON INDUSTRIES, INC.	ROUTE 122	LYNDON	
1290		NORTHEAST TOOL DIV/VT. AMERICAN CORP	AIRPORT ROAD	LYNDON	
1041		ORGANIZATIONAL MAINTENANCE SHOP #5	HILL STREET	LYNDON	97
1458		PINE KNOLL NURSING HOME, INC.	KIRBY ROAD	LYNDON	
343	94	SHOP-A-MINIT	97 MAIN STREET	LYNDON	98
6263378		SPEEDWELL GAS	ROUTE 5	LYNDON	97
2241		T & D TRUCK MAINTENANCE	RED VILLAGE ROAD	LYNDON	98
6268621		TERMINAL-NORTHERN GAS TRANSPORT	ROUTE 122	LYNDON	94P2
285		VAOT LYNDON GARAGE	ROUTE 122	LYNDON	96
6269580		VILLE GARAGE	67 BROAD STREET	LYNDON	97
1653		MAIN BUILDING	ROUTE 122	LYNDON CENTER	
6269252		ELECTRIC DEPARTMENT GARAGE/FIRE STA.	GROVE STREET	LYNDONVILLE	
1811		LYNDON STATE COLLEGE	VAIL HILL	LYNDONVILLE	

Facility ID#	Hazardous Sites ID#	Facility Name	Facility Address	Town	Year Pulled
1110435		LANDMANS INC.	ROUTE 100/RIVER STREET, SOUTH LONDON	LONDONDERRY	1993
1809	890443	MAGIC SKI AREA MAINTENANCE SHOP	MAGIC MOUNTAIN ACCESS ROAD	LONDONDERRY	1993
9999646		NEW ENGLAND TELEPHONE	ROUTE 100	LONDONDERRY	1990
9999607	94	PLACHTA EQUITY ASSOCIATES	ROUTE 11 AT MAGIC MTN ACCESS ROAD	LONDONDERRY	1994
907		SOUTH LONONDERRY CDO	RT 8	LONDONDERRY	1990
827	911027	WILEY'S GARAGE	STAR ROUTE 1	LONDONDERRY	1991
113		ARGONAUT MINE	EAST HILL ROAD	LUDLOW	1988
4847735		CLIFTON MINE	EAST HILL ROAD	LUDLOW	1988
2287825		GEORGE B. TUCKER	ANDOVER ROAD	LUDLOW	1992
9990132		JEWELLL BROOK MILLS PROPERTY		LUDLOW	1988
1365		MICHAEL'S SEAFOOD & STEAK TAV.	ROUTE 103	LUDLOW	1988
112		RAINBOW MINE	EAST HILL ROAD	LUDLOW	1988
9990133		RESIDENCE	LOT 15, WEST VILLAGE OKEMO	LUDLOW	1988
2285449	94	TYSON GENERAL STORE	ROUTE 100	LUDLOW	1994
2286	94	U.S. POST OFFICE	198 MAIN STREET	LUDLOW	1994
9990381		WALKER HOUSE	101 MAIN STREET	LUDLOW	1993
9990134		DAVE'S TEXACO SERVICE	ROUTE 2	LUNENBURG	1988
948	880227	GILMAN CARGO	MAIN STREET, GILMAN	LUNENBURG	1988
9990135	900530	LINGS GARAGE	RIVERSIDE AVENUE, GILMAN	LUNENBURG	1990
8925515	931542	SIMPSON PAPER CO.	RIVERSIDE AVENUE	LUNENBURG	1993
9990136		AGWAY	MEMORIAL DRIVE, ROUTE 5	LYNDON	1990
6268043	94	CHAMBERLAIN BUS SERVICE, INC.	SOUTH WHEELOCK ROAD	LYNDON	1994
6263393		CHARLES MURRAY & SON /SPEEDWELL INC	ROUTE 5	LYNDON	1989
1718		CONCORD WOODWORKING CO., INC.	100 CHURCH STREET	LYNDON	1989
350	92	GETTY STATION #39	ROUTE #5 P.O. BOX 641	LYNDON	1992
6365555		HOPKINS & SONS, INC., BULK PLANT	RAYMOND STREET	LYNDON	1987
9990137		LYNDONVILLE AIR FORCE STATION	ACCESS ROAD	LYNDON	1991
9990347	921316	NEW ENGLAND TELEPHONE	6-8 CENTER STREET	LYNDON	1992
6268844		R. A. STAHLER & SONS, INC.	17 BROAD STREET, ROUTE 5	LYNDON	1986
6263240		SIMBLEST, BEVERLY S.	4 HILL STREET	LYNDON	1988
9990423		THREE BROS. GARAGE	MEMORIAL DRIVE, ROUTE 5	LYNDON	1993
1118	911178	TOWN OF LYNDON HIGHWAY GARAGE	R-114	LYNDON	1991
1991		VILLAGE SHED	EAST STREET	LYNDON	1992
9999628		BURKE VIEW GARAGE	RT 114	LYNDONVILLE	1994
9999634		FALCON WELL DRILLING	ROUTE 114	LYNDONVILLE	1994
257	880278	AOT'S MANCHESTER GARAGE		MANCHESTER	88&90
688		CENTRAL VERMONT PUBLIC SERVICE	RICHVILLE ROAD	MANCHESTER	1987
3622098		CHARLES TOWSLEE	ELM STREET	MANCHESTER	1989

ACTIVE SITES

Site #	Site Name	Street Address	Town Name	Project Status
911123	IRASBURG GENERAL STORE	RT 14	IRASBURG	REMEDIATION AND MONITORING ONGOING.
941591	CARSONS MARKET	ROUTE 129	ISLE LA MOTTE	DETERMINE DEGREE AND EXTENT OF CONTAMINATION
900595	BALL MTN. DAM REC. AREA	OFF ROUTE 100	JAMAICA	UST CONTAMINATION FOUND. MONITORING ONGOING.
911007	RAWSONVILLE	ROUTES 100 & 30	JAMAICA	INVEST COMPLETE, MONITORING ONGOING
911106	KEARLEY FUELS	RT 30	JAMAICA	SUDDEN RELEASE OF 1000 GALLONS GAS. REMEDIATION UNDERWAY.
921334	JAMAICA N E T	ROUTE 30	JAMAICA	UST REMOVED. SOIL STOCKPILED, GW NOT ENCOUNTERED, LOW PID'S
931493	NICHOLS RESIDENCE	MEADOWS RD	JAMAICA	FURTHER INVEST OF GW AND SOIL CONTAM PENDING
770190	SPACE RESEARCH	NORTH JAY ROAD	JAY	DEC PA COMPLETE 4/91
770051	US ARMY ETHAN ALLEN FIRING RANGE	LEE RIVER ROAD	JERICHO	INVESTIGATION PROCEEDING
880203	DESSO'S	BROWNS TRACE RD.	JERICHO	SITE INVESTIGATION COMPLETED. MONITORING ONGOING. RETURN BLOWER.
890397	MT MANSFIELD SCHOOL	BROWN'S TRACE RD.	JERICHO	GW INVESTIGATION COMPLETED. MONITORING ONGOING BY SCIENCE DEPT
941594	CHITTENDEN MILLS BEVERAGE	ROUTE 15	JERICHO	DETERMINE DEGREE AND EXTENT OF CONTAMINATION
870086	C.H.STEARNS	ROUTE 15	JOHNSON	SITE MONITORING ONGOING.
880226	HARVEYS CITGO	RT 15	JOHNSON	SITE REOPENED. S I TO BE PERFORMED.
900657	JOHNSON TOWN GARAGE	ROUTE 15	JOHNSON	VSPS COMPLETE.
921235	VERMONT ELECTRIC COOP	ROUTE 15	JOHNSON	SOIL VAPOR EXTRACTION SYSTEM IN PLACE
941607	NADEAU SAND AND GRAVEL	ROUTE 15	JOHNSON	DETERMINE DEGREE AND EXTENT OF CONTAMINATION
900614	TOWN OF KIRBY	KIRBY RD.	KIRBY	SOIL DISPOSED OF APPROPRIATELY
890429	LEICESTER	ROUTE 116	LEICESTER	INVEST. COMPLETE. DEC MONITORING MW'S. SOILS AWAITING FINAL DISPOSAL.
880184	AOT LONDONDERRY	RT 100	LONDONDERRY	SITE PREVIOUSLY CLOSED. UST IN 1991 FOUND DIRTY DIRT. SOIL STOCKPILED.
890443	MAGIC MOUNNTAIN	SKI AREA	LONDONDERRY	VSPS COMPLETE.
911027	WILEYS GARAGE	MAIN ST	LONDONDERRY	REQUESTED ADDITIONAL INFO 7/31/91.
911061	LONDONDERRY AUTO	RT 11, BOX 115	LONDONDERRY	C A P REVISIONS REQUESTED
931430	FLOOD BROOK SCHOOL	RT 11, P O BOX 68	LONDONDERRY	STOCKPILOED SOIL FROM UST REMOVAL NEEDS TREATMENT AND DISPOSAL
941593	PLACHTA EQUITY ASSOC	ROUTE 11	LONDONDERRY	DETERMINE DEGREE AND EXTENT OF CONTAMINATION
931500	LUDLOW MOBIL	MAIN ST	LUDLOW	2000 GAL SUDDEN RELEASE
931520	GILL ODD FELLOWS HOME	8 GILL TERRACE	LUDLOW	DETERMINE DEGREE AND EXTENT OF CONTAMINATION
941645	KUBELS SUNOCO	224 MAIN ST	LUDLOW	DETERMINE DEGREE AND EXTENT OF CONTAMINATION
941652	TYSON GENERAL STORE	RT 100	LUDLOW	DETERMINE DEGREE AND EXTENT OF CONTAMINATION
770052	GEORGIA PACIFIC CORP. WHITEFIELD	RIVERSIDE AVENUE	LUNENBURG	DEC SI COMPLETED 9/88
931542	SIMPSON PAPER CO	RIVERSIDE AVE - GILMAN	LUNENBURG	DETERMINE DEGREE AND EXTENT OF CONTAMINATION
770013	* PARKER LANDFILL	LILY POND ROAD	LYNDON	PRPs ARE CONDUCTING RI/FS.
770014	* DARLING HILL DUMP	DARLING HILL ROAD	LYNDON	WATER TREATMENT FAC OPERATING, RI/FS COMPLETE, EPA NO ACTION ROD,
770015	MARDON INDUSTRIES	ROUTE 122	LYNDON	OWNER IN BANKRUPTCY, LIENHOLDER CONDUCTED RECENT SAMPLING
770054	BURKE VIEW GARAGE	ROUTE 114	LYNDON	NUS PA COMPLETED 6/86, NUS DRAFT SSI COMMENTS SENT 9/90
900489	LYNDON STATE COLLEGE	COLLEGE RD.	LYNDON	DEC MONITORING.
911032	VT TAP AND DIE CORP	79 MAIN ST	LYNDON	RI/FS COMPLETED AND REMEDIAL OPTIONS BEING EVALUATED
911178	LYNDON TOWN GARAGE	RT 114	LYNDON	UST CONTAM FOUND. AWAITING QUARTERLY SAMPLES 2/93

* sitename = a National Priority List (Superfund) Site

10/27/94

/94

CLOSED SITES

Site #	Site Name	Street	Town Name	Project Status
770207	MINTZER BROTHERS		LUDLOW	SITE INVESTIGATED, NO CONTAMINATION DETECTED, SITE CLOSED
870052	MINTZER BROTHERS/RUTLAND GROUP		LUDLOW	SITE CLOSED
870098	JOHNSON AND DIX		LUDLOW	SITE CLOSED
870147	BLACK RIVER PRODUCE		LUDLOW	SITE CLOSED
880279	A O T LUDLOW		LUDLOW	SITE CLOSED
880284	LOT 15		LUDLOW	SITE CLOSED
890342	LUDLOW JIFFY MART		LUDLOW	SITE CLOSED
890428	OKEMO MTN LTD - LAMPERT PARCEL	VERMONT RT 103 NORTH	LUDLOW	LANDFARM COMPLETED, SITE CLOSED
941652	TYSON GENERAL STORE	RT 100	LUDLOW	SITE INVEST COMPLETE, SITE CLOSED 10/18/94
770101	MERIDEN-STINEHOUR		LUNENBURG	SITE CLOSED
931474	GILMAN SCHOOL	RIVER RD	LUNENBURG	ASSESS COMPLETE,ACTIVITY COMPETE
770034	CALEDONIA COUNTY FAIRGROUNDS		LYNDON	PA RECOMMENDS NO FURTHER ACTION, SITE CLOSED
770053	TOWER SLUDGE DISPOSAL AREA		LYNDON	NUS PA COMPLETED 12/87, LOW PRIORITY
770055	MOUNTAIN VIEW AUTO RESTORATION		LYNDON	NUS ESI REPORT 6/89, LOW PRIORITY
770056	LEMIEUX TRUCK STOP		LYNDON	NUS ESI COMPLETED 6/89, LOW PRIORITY
770117	LYNDONVILLE TOWN HIGHWAY GARAGE		LYNDON	NUS PA COMPLETED 5/86, LOW PRIORITY
770149	DAVE TOWERS STORAGE AREA		LYNDON	PA RECOMMENDS NO FURTHER ACTION, SITE CLOSED
770150	CALKINS		LYNDON	WASTE OIL SOILS CLEANUP, SITE CLOSED
870017	MARDEN INDUSTRIES		LYNDON	SITE CLOSED
870087	LYN HAUGH		LYNDON	SITE CLOSED
880254	LYNDONVILLE TEXACO		LYNDON	SITE CLOSED
890291	WOODWAY MOVING AND STORAGE, INC	ST.J.-LYNDONVILLE INDUST. PAR	LYNDON	WASTE OIL CONTAMINATED SOILS.
900574	LYNDONVILLE ELECTRIC	GROVE ST.	LYNDON	ASSESSMENT COMPLETED. MONITORING ON SEMI-ANNUAL BASIS
911087	AOT-LYNDON	RT 122	LYNDON	GW INVESTIGATION COMPLETE, SITE CLOSED
911141	N E TOOLS DIVISION	PUDDING HILL RD	LYNDON	3000 G. SPILL OF CUTTING OIL. CLEANUP COMPLETE. MONITORING UND
870015	R K MILES		MANCHESTER	SITE CLOSED
870044	TULSA/N E VIDEO		MANCHESTER	SITE CLOSED
870056	ORVIS		MANCHESTER	SITE CLOSED
870128	A O T		MANCHESTER	SITE CLOSED
880252	PAULS MOBIL		MANCHESTER	SITE CLOSED
890308	DESIGNER'S OUTLET		MANCHESTER	SITE TO BE CLOSED. COST RECOVERY INITIATED.
890451	JOHNSON'S BULK PLANT	RT 11 AND 30	MANCHESTER	SITE CLOSED
900495	MANCHESTER COUNTRY CLUB		MANCHESTER	INVEST COMPLETE
900577	HERBERT WALKER	ROUTE 7	MANCHESTER	SITE CLOSED 12/5/91
911037	MANCHESTER WOOD, INC	DEPOT ST	MANCHESTER	CLOSED 12/8/92
911080	MARLBORO TOWN FIRE DEPT	DEPOT ST.	MARLBORO	SAMPLING SHOWS NO CONTAMINATION GOING OFFSITE
890469	TWINFIELD AUTO	SOUTH RD	MARSHFIELD	SITE CLOSED
770132	AOT GARAGE		MENDON	SITE INVESTIGATED, NO CONTAMINATION DETECTED, SITE CLOSED
880260	NOTCH RD		MENDON	SITE CLOSED
931352	FORMER RUTLAND GROUP PROPERTY	ROUTE 4	MENDON	SITE CLOSED
770032	DAYTONS STORE		MIDDLEBURY	SITE CLOSED
770064	TEBCO II		MIDDLEBURY	SITE CLOSED

Yr- #	Occurred	Town/Location/Waters/Pin#		Responsible Party	Phone/EPA-ID	Closed,Code
73-033	5/31/73	LUDLOW BLACK RIVER Description: TRUCK ACCIDENT Response: BRIDGE FAILURE CAUSED ACCIDENT	DIESEL	25G		
75-067	8/15/75	LUDLOW BLACK RIVER Description: TRUCK ACCIDENT Response:	MILK	3200G NO FURTHER INFO AVAIL		
78-087	9/09/78 0940	LUDLOW MOBIL STATION BLACK RIVER Description: LUST Response: W.R. INVEST	GASOLINE	MOBIL OIL CO 2000G MOBIL CLEAN UP		
78-101	11/14/78 1600	LUDLOW TEXACO MINI-MART BLACK RIVER Description: TANK OVERFILL Response: W.R. SITE VISIT	GASOLINE	CRAY OIL CO 250G DRIVER FELL ASLEEP.F.D. FLUSHED AREA		
79-148	12/28/79	LUDLOW CRAY OIL Description: TANK OVERFILL Response: SITE VISIT	#2	1000G		
81-001	1/04/81 1115	LUDLOW CRAY OIL BULK PLANT Description: TANK OVERFILL Response:	# 2	CRAY OIL PROCTORSVILLE VT 500G CRAY CLEAN UP		
81-002	1/08/81 1000	LUDLOW OKEMO SKI AREA Description: DEFECTIVE HOSE	SOD. HYPOCHLORITE	ALLEN ENGINEERING 100G		

Legend- units of measure G = Gallons P = Pounds Y = Yards

Yr- #	Occurred	Town/Location/Waters/Pin#		Responsible Party	Phone/EPA-ID	Closed,Code
81-191	11/13/81	LUDLOW T.A. ELECTRONICS		T.A. ELECTRONICS LUDLOW VT		
		Description: STORAGE BUILDING FIRE	CHEMICALS			
		Response: F.P.,W.R. INVEST		NO FURTHER INFO AVAIL		
82-008	1/21/82	LUDLOW OKEMO SKI AREA				
		Description: EXPLOSOION, FIRE, OIL SPILL	DIESEL/ CRANKCASE OIL	100G		
		Response: REPORT TAKEN		LUDLOW F.D. CLEAN UP		
82-020	2/05/82	LUDLOW RT 103		JOHNSON & DIX		
		Description: TANK OVERFILL	# 2	20G		
		Response: REPORT TAKEN	W.R.INVESTIGATED	JOHNSON & DIX CLEAN UP (POORLY DONE)		
82-115	7/02/82	LUDLOW E.C. LUCAS CO BLACK RIVER		E.C. LUCAS CO LUDLOW VT		
		Description: ABOVE GROUND TANK LEAK	#2	100G		
84-094	7/15/84	LUDLOW RT 103 LOCAL RIVER		WILLIAM HOLDMAN TRUCKING MIDDLEBURY		
		Description: TRUCK ACCIDENT	MILK	5000		
		Response: F.D.CLEAN UP				
87-039	3/23/87	LUDLOW 120 MAIN		TONY LAMBROU 40 FLAT SWAMP RD NEWTON,CN		
		Description: OIL IN DRIVEWAY				
87-134	7/15/87	LUDLOW PLEASANT ST		BLACK RIVER PRODUCE		
		Description: OIL LEAK	FUEL OIL			
		Response: TO TECH SUPPORT GROUP				

Legend- units of measure G = Gallons P = Pounds Y = Yards

Yr- #	Occurred	Town/Location/Waters/Pin#		Responsible Party	Phone/EPA-ID	Closed,Code
88-056	3/18/88	LUDLOW		Johnson & Dix		3/21/88
	2021	Rt. 100				
		Description: spill- overfill of tank	#2 Fuel Oil	30		
		Response: site inspection		closed		
88-068	3/31/88	LUDLOW		Johnson & Dix		
	1000	RT 100 Sugar hse				
				Ascutney		
		Description: Ruptured fuel oil line	#2 Fuel Oil	50		
		Response: Bill Barry advised				
89-172	8/07/89	LUDLOW		Okemo		
	1335	Okemo Mountain				
		Description: Oil on river bank	Diesel fuel			
		Response: BB to site,Okemo cleanup				
90-026	2/14/90	LUDLOW		Okemo Mountain		
	1956	Okemo Ski Area		Barry Martin		
				228-4041		
		Description: Fire at compressor house	Diesel Fuel	100		
		Response: Information only				
90-284	12/05/90	LUDLOW		KERMIT UPTOWN		
	1200	27 MAIN ST		MTN. AUTO SPORTS		
				LUDLOW VT		
		Description: POSSIBLE LUST	GAS			
		Response: ABANDONED TANK ON SITE		TANK TO BE REMOVED		
92-315	11/19/92	LUDLOW		LUZENAC AMERICA INC		11/20/92
	1200	LUZENAC AMERICA INC		EAST HILL RD		
				LUDLOW VT		
		Description: HOSE BROKE ON CRUSHER	HYDRAULIC FLUID	55G		
		Response: REPORT TAKEN		SPEEDI DRI CLEAN UP, GROUND FROZEN		
92-337	12/14/92	LUDLOW				12/14/92
	1115	COLONIAL MOTEL				
		Description: FILTER GASKET LEAK IN BASEMENT #2		10G		
		Response: REPORT TAKEN		JOHNSON AND DIX TO REMOVE SOIL & DISPOSE		

Legend- units of measure G = Gallons P = Pounds Y = Yards

Yr- #	Occurred	Town/Location/Waters/Pin#			Responsible Party	Phone/EPA-ID	Closed,Code
92-339	12/17/92	LUDLOW			TRUE VALUE INC		
	1530	RT 103 SOUTH					
		Description: TRUCK ACCIDENT	DIESEL	10G			
		Response: REPORT TAKEN					
93-065	3/22/93	LUDLOW					3/23/93 1
	0830	PEASANT AND MAIN ST					
		Description: GASOLINE VAPOR IN SEWER LINE	GASOLINE				
		Response: SEWERS FLUSHED, ODORS DISSAPAT					
93-076	4/02/93	LUDLOW			PARKER OIL	226-7241	4/02/93 2
		RT 7 PROCTORSVILLE/LUDLO					
		Description: TRUCK TANK LEAK	FUEL OIL	10G			
		Response: SHEENS DISPERSED BY TRAFFIC		SAND SPREAD BY AOT			
93-078	4/02/93	LUDLOW			PARKER OIL	226-4421	4/02/93 2A
	1245	ROUTE 11					
		Description: OIL LEAK	HEATING OIL	2G			
		Response: LEAK ON HIGHWAY, SAND SPREAD		NO CLEAN UP POSSIBLE			
93-353	12/07/93	LUDLOW			MIDWAY OIL CO		12/07/93 R
	0950	MAIN ST MOBIL STATION					
		Description: GASOLINE LEAK	GASOLINE	2000G			
		Response: B HASLAM TO SITE, GRIFFIN CLEA	SITES 12/2/93	SITE #93-1500			
94-119	4/13/94	LUDLOW					4/14/94 1
	0840	RT 103					
		Description: TRUCK ACCIDENT	DIESEL	2G			
94-363	12/16/94	LUDLOW					12/16/94 1
	0915	MT ASCUTNEY SKI AREA					
		Description: SPILL DURING TRANSFER	#2	100G			
		Response: OIL CONTAINED IN DIKED AREA		ASCUTNEY CREW CLEAN UP AND STORAGE			

TOTAL OCCURRENCES THIS REPORT 28

Legend- units of measure G = Gallons P = Pounds Y = Yards

APPENDIX C
BORING LOGS

Wehran EnviroTech

BORING/WELL NO. MW-1

SHEET 1 of 1

PROJECT: *USPS Ludlow*
CLIENT: *United States Postal Service*
CONTRACTOR: *New Hampshire Boring*

PROJECT NO: *04722.02*
RIG: *Mobile B-47*

GS ELEV: *97.42ft.*
N-S COORD: *NA*
E-W COORD: *NA*
WL REF ELEV: *96.49ft.*
DATE STARTED: *12/19/94*
DATE FINISHED: *12/19/94*
OPERATOR: *B. Dougherty*
GEOLOGIST: *E. Martin*

GROUNDWATER DATA (feet)

DATE	GW DEPTH	GW ELEV	INTAKE
12/28/94	9.00	87-49	5-15

	CASING	SAMPLE	TUBE	CORE
TYPE	HSA	SS		
DIAM.	4¼" ID	2" OD		
WEIGHT		140 lbs		
FALL		30"		

WELL CONSTRUCT	DEPTH (feet)	SAMPLE NUMBER	SAMPLE & TYPE	RECOVERY (inches)	N-VALUE	LOG	HNu	FIELD DESCRIPTION (Modified Burmister Methodology)	REMARKS
								-FILL- Pavement and Gravel FILL.	
		SS-1		4	14		4.4	Medium brown, medium SAND, little coarse Sand, trace Silt, trace fine Gravel, moist.	
		SS-2		0	8		NA	No recovery, piece of rock in end of spoon.	
	5	SS-3		3	56		5.7	Medium brown, medium to coarse SAND, some medium coarse Gravel (angular), little fine Sand, trace Silt, moist (surface water in fill).	
		SS-4		0	13		NA	No recovery, rock wedged in end of spoon.	
	10	SS-5		5	185		336	Brown to gray, coarse SAND, some fine to medium gravel (angular, broken), little fine to medium Sand, trace Silt, trace coarse Gravel, saturated. Strong fuel oil odor, saturated.	▽
		SS-6		8	98		115	Brown/gray, medium SAND and GRAVEL (fine, angular), some fine Sand, little coarse Sand, trace Silt, trace coarse Gravel (broken, angular), saturated. Fuel oil odor, slightly stained.	
		SS-7		14	58		68	Brown/gray, medium SAND and GRAVEL (fine, angular), some fine Sand, little coarse Sand, trace Silt, trace coarse Gravel (broken, angular), saturated. Fuel oil odor and gray staining still present.	
	15	SS-8		0	100		NA	No recovery	
	20							*END OF BORING AT 16.5 FEET*	
	25								

Notes:

1. PID is a photoionization detector headspace analysis measurement in parts per million.
2. Saturated zone at 9.0 to 10.5 feet could be percolated water in fill of former tank excavation.

Wehran EnviroTech

BORING/WELL NO. MW-2

SHEET 1 of 1

PROJECT: *USPS Ludlow*
CLIENT: *United States Postal Service*
CONTRACTOR: *New Hampshire Boring*

PROJECT NO: *04722.02*
RIG: *Mobile B-47*

GS ELEV: *98.73ft.*
N-S COORD: *NA*
E-W COORD: *NA*
WL REF ELEV: *98.45ft.*
DATE STARTED: *12/20/94*
DATE FINISHED: *12/21/94*
OPERATOR: *B. Dougherty*
GEOLOGIST: *E. Martin*

GROUNDWATER DATA (feet)

DATE	GW DEPTH	GW ELEV	INTAKE
12-28-94	*9.24*	*89.21*	*4-14*

	CASING	SAMPLE	TUBE	CORE
TYPE	*Steel*	*SS*		
DIAM.	*4" ID*	*2" OD*		
WEIGHT		*140 lbs*		
FALL		*30"*		

WELL CONSTRUCT	DEPTH (feet)	SAMPLE NUMBER	SAMPLE & TYPE	RECOVERY (inches)	N-VALUE	LOG	HNu	FIELD DESCRIPTION (Modified Burmister Methodology)	REMARKS
								FILL Pavement and Gravel.	
		SS-1		3	105		0.0	Medium brown, fine SAND, trace coarse Sand, little Silt, trace fine Gravel, dry to moist.	
		SS-2		2	100		0.0	Medium brown, medium to coarse SAND and GRAVEL, dry.	
	5	SS-3		0	100		NA	No recovery	
								Drive and wash through cobbles. No sampling 7 to 11 feet.	
	10								▼
		SS-4		5	107		13.2	Medium to light brown, coarse SAND and GRAVEL, some Silt, trace fine Sand, saturated.	
		SS-5		6	56		13.5	Medium to light brown, coarse SAND, some Silt, little Gravel (fine to medium angular to sub-rounded), saturated.	
	15							*END OF BORING AT 15 FEET*	
	20							Notes 1. PID is a photoionization detector headspace analysis measurement in parts per million.	
	25								

Wehran EnviroTech

BORING/WELL NO. MW-3

SHEET 1 of 1

PROJECT: *USPS Ludlow*
CLIENT: *United States Postal Service*
CONTRACTOR: *New Hampshire Boring*

PROJECT NO: *04722.02*
RIG: *Mobile B-47*

GS ELEV: *99.50ft.*
N-S COORD: *NA*
E-W COORD: *NA*
WL REF ELEV: *99.33ft.*
DATE STARTED: *12/22/94*
DATE FINISHED: *12/22/94*
OPERATOR: *B. Dougherty*
GEOLOGIST: *E. Martin*

GROUNDWATER DATA (feet)

DATE	GW DEPTH	GW ELEV	INTAKE
12-28-94	*10.80*	*88.53*	*4-14*

	CASING	SAMPLE	TUBE	CORE
TYPE	*Steel*	*SS*		
DIAM.	*4" ID*	*2" OD*		
WEIGHT		*140 lbs*		
FALL		*30"*		

WELL CONSTRUCT	DEPTH (feet)	SAMPLE NUMBER	SAMPLE & TYPE	RECOVERY (inches)	N-VALUE	LOG	HNu	FIELD DESCRIPTION (Modified Burmister Methodology)	REMARKS
								-FILL- Pavement and gravel.	
		SS-1		8	11		24.0	Medium to dark brown, fine to medium SAND, little fine Gravel (angular to sub-rounded), trace coarse Sand, dry.	
	5	SS-2		7	27		32.0	Light brown, medium to coarse SAND, some fine to medium Gravel, little fine Sand, trace Silt, dry.	
		SS-3		4	106		24.4	Light brown, medium to coarse SAND, some fine to medium Gravel, little fine Sand, trace Silt, saturated.	
	10	SS-4		3	167		18.6	Light brown, medium to coarse SAND, some fine to medium Gravel, little fine Sand, trace Silt, saturated.	▼
		SS-5		10	80		18.0	Medium brown, fine to medium SAND, some Silt, little fine to medium Gravel, trace coarse Sand, saturated. Refusal.	
	15							*END OF BORING AT 15 FEET*	
	20								
	25								

Notes

1. PID is a photoionization detector headspace analysis measurement in parts per million.

APPENDIX D
ANALYTICAL RESULTS
SOIL
GROUNDWATER
BACTERIAL PROFILE

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

CERTIFICATE OF ANALYSIS

Client: Wehran Engineering

Address: Chace Mill Box B15
1 Mill Road
Burlington, VT 05401

Attn: Nick Nowlan

Project Number: 04722-02

Site: USPS / Ludlow, VT

Laboratory Job Number: L9410625

Invoice Number: 69863

Date Received: 23-DEC-94

Date Reported: 29-DEC-94

Delivery Method: Fed ex

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L9410625-01	MW-1SB-2/SS-5/9'-10.5'	
L9410625-02	MW-2SB-1/SS-5/13'-15'	
L9410625-03	MW-3SB-4/SS-2/4'6'	

Authorized by: James R. Roth

James R. Roth, PhD - Laboratory Manager

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9410625-01
MW-1SB-2/SS-5/9'-10.5'
Sample Matrix: SOIL

Date Collected: 19-DEC-94
Date Received : 23-DEC-94
Date Reported : 29-DEC-94

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1 Glass

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS
Solids, Total	87.	%	0.10	3	2540B		27-Dec
Hydrocarbons, Total	4600	mg/kg	40.	1	418.1	28-Dec	28-Dec

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9410625-02
MW-2SB-1/SS-5/13'-15'
Sample Matrix: SOIL

Date Collected: 20-DEC-94
Date Received : 23-DEC-94
Date Reported : 29-DEC-94

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1 Glass

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS
Solids, Total	91.	%	0.10	3	2540B		27-Dec
Hydrocarbons, Total	170	mg/kg	40.	1	418.1	28-Dec	28-Dec

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9410625-03
MW-3SB-4/SS-2/4'6'
Sample Matrix: SOIL

Date Collected: 21-DEC-94
Date Received : 23-DEC-94
Date Reported : 29-DEC-94

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1 Glass

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS
Solids, Total	94.	%	0.10	3	2540B		27-Dec
Hydrocarbons, Total	350	mg/kg	40.	1	418.1	28-Dec	28-Dec

Comments: Complete list of References and Glossary of Terms found in Addendum I

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. 1986.

3. Standard Methods for Examination of Water and Waste Water. APHA-AWWA-WPCF. 17th Edition. 1989.

GLOSSARY OF TERMS AND SYMBOLS

< Indicates analyte not detected at stated value, i.e. Reporting Detection Limit.

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

85 69963

ALPHA
Analytical Laboratories, Inc.

Eight Walkup Drive
Westborough, MA 01581-1019
508-898-9220 FAX 508-898-9193

CHAIN OF CUSTODY RECORD and ANALYSIS REQUEST RECORD

No. 41813
Sheet 1 of 1

Company Name: WEHRAN EMCON	Project Number: 04722.02 P.O. Number: J1026	Project Name/Location: USPS LUDLOW, VERMONT WO# 94-0000170-057	Date Received in Lab: 12/23	Date Due: RUSH 3 DAYS 12/29 PWT
Company Address: 1 MILL STREET CHACE MILL BOX B-15 BURLINGTON, VT. 05401-1830	Phone Number: (802) 658-6884 FAX No.: 658-5014	Project Manager: NICK NOWLAN EUGENE J. MARTIN	Alpha Job Number: (Lab use only) 94 10625	

Container Codes: P = Plastic V = Vial C = Cube G = Glass A = Amber Glass B = Bacteria Container O = Other

MATRIX / SOURCE CODES: MW = Monitoring Well, RO = Runoff, O = Outfall, W = Well, L F = Landfill, L = Lake/Pond/Ocean, I = Influent, E = Effluent, DW = Drinking Water, R = River Stream, S = Soil, SG = Sludge, B = Bottom Sediment, X1 = Other, X2 = Other

ALPHA Lab # (Lab Use Only)	Sample I.D.	Containers (number/type)	Matrix / Source	Method Preserve. (number of containers): Unpres.	Ice	Nitric	Sulfuric	HCl	Other	Solubles - F.F.	Sampling Date	Sampling Time	Analysis Requested
10625.1	MW-1 SB-2/SS-5/9'-10.5'	CLEAR 250ml / GLASS JAR	S	X	X						12/19	14:00	TPH EPA 418.1 (TS)
2	MW-2 SB-1/SS-5/13'-15'	"	S	X	X						12/20	10:32	TPH EPA 418.1 (TS)
3	MW-3 SB-4/SS-2/4'-6'	"	S	X	X						12/21	13.01	TPH EPA 418.1 (TS)
			~~S~~	X	X						12/		~~TPH EPA 418.1~~
			S	X	X						12/		~~TPH EPA 418.1~~
			S	X	X						12/		~~TPH EPA 418.1~~

Sampler's Signature	Affiliation	Date	Time
Eugene J. Martin	WEHRAN	12/22	12:00 p.m.

ADDITIONAL COMMENTS:
1) 3 DAY TURNAROUND REQUIRED
2) SHIPPED FEDX ON 12-22-94 PRIORITY

NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	~~UPS~~ Fedex	S Guillotte	12/23	1130
2				
3				
4				

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

CERTIFICATE OF ANALYSIS

Client: Wehran Engineering

Address: Chace Mill Box B15
1 Mill Road
Burlington, VT 05401

Attn: Nick Nowlan

Project Number: 04722-02

Site: USPS / Ludlow, VT

Laboratory Job Number: L9410744

Invoice Number: 70046

Date Received: 30-DEC-94

Date Reported: 06-JAN-95

Delivery Method: Fed ex

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L9410744-01	MW-1	
L9410744-02	MW-2	
L9410744-03	MW-3	

Authorized by:

James R. Roth, PhD - Laboratory Manager

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9410744-01
MW-1
Sample Matrix: LIQUID

Date Collected: 28-DEC-94
Date Received : 30-DEC-94
Date Reported : 06-JAN-95

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1 Amber Glass

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS
Hydrocarbons, Total	19.	mg/l	0.50	1	418.1	03-Jan	04-Jan

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9410744-02
MW-2
Sample Matrix: LIQUID

Date Collected: 28-DEC-94
Date Received : 30-DEC-94
Date Reported : 06-JAN-95

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1 Amber Glass

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS
Hydrocarbons, Total	ND	mg/l	0.50	1	418.1	03-Jan	04-Jan

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9410744-03
MW-3
Sample Matrix: LIQUID

Date Collected: 28-DEC-94
Date Received : 30-DEC-94
Date Reported : 06-JAN-95

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1 Amber Glass

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS
Hydrocarbons, Total	ND	mg/l	0.50	1	418.1	03-Jan	04-Jan

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABS
ADDENDUM I

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. 1986.

GLOSSARY OF TERMS AND SYMBOLS

< Indicates analyte not detected at stated value, i.e. Reporting Detection Limit.

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive
Westborough, MA 01581-1019
508-898-9220 FAX 508-898-9193

CHAIN OF CUSTODY RECORD and ANALYSIS REQUEST RECORD

No. 41814

Sheet 1 of 1

Company Name:	Project Number:	Project Name/Location:	Date Received in Lab:	Date Due:
WEHRAN EMCON	04722.02 P.O. Number: 31326	USPS LUDLOW, VT. LOOA # 94-0000170-033	12/30	~~1-3-94~~ 1/5

Company Address:	Phone Number:	Project Manager:	Alpha Job Number: (Lab use only)
1 MILL STREET BOX B15 BURLINGTON, VT. 05401 - 1530	(802) 658-6884 FAX No.: 658-5014	NICK NOWLAN / GENE MARTIN	9410744

Container Codes: P = Plastic V = Vial C = Cube G = Glass A = Amber Glass B = Bacteria Container O = Other

MATRIX / SOURCE CODES: MW = Monitoring Well (circled) RO = Runoff O = Outfall W = Well LF = Landfill L = Lake/Pond/Ocean I = Influent E = Effluent DW = Drinking Water R = River Stream S = Soil SG = Sludge B = Bottom Sediment X1 = Other___ X2 = Other___

ALPHA Lab # (Lab Use Only)	Sample I.D.	Containers (number/type)	Matrix / Source	Unpres.	Ice	Nitric	Sulfuric	HCl	Other	Solubles - F.F.	Sampling Date	Sampling Time	Analysis Requested
10744.1	MW - 1	(2) 1 LITER AMBER, GLASS	MW	X	X						12/28	16:59	EPA 418.1 / TPH
2	MW - 2	(2) 1 LITER AMBER, GLASS	MW	X	X						12/28	16:20	EPA 418.1 / TPH
3	MW - 3	(2) 1 LITER AMBER, GLASS	MW	X	X						12/28	16:40	EPA 418.1 / TPH
													fax results
													see file for MP. v inv.
													samples ~~[illegible]~~ ~~[illegible]~~ pres @ lab.
													TAT OK w/ Gene 12/30 1040am

Sampler's Signature	Affiliation	Date	Time
Eugene Martin	WEHRAN	12/29	11:02 AM

NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	Fedex	Johnson	12/30	1040Am
2				
3				
4				

ADDITIONAL COMMENTS:

1. 3 DAY TURNAROUND
2. MW - 1 HAS MOD. FUEL OIL CONTAMINATION

Client Name: Wehran Emcon.
Address: Chace Mill, 1 Mill St. Box B15 Burlington, VT.
Project Name: USPS Ludlow, VT.
Project No.: 04722.02
Project Manager: Eugene Martin

Analysis Requested: Assessment of the potential for biodegradation of #2 fuel oil.

Samples: Two samples were submitted on 12/19/94, identified as SB-1 SS4 (control soil) and SB-2 SS5 (test soil).

METHOD: Samples were treated by ten fold serial dilution in buffered water, 10^{-4}-10^{-6} and 0.1 mL of each dilution spread plated in triplicate onto each of three media. R2A agar was used as a control, representing a nutritionally complex substrate. The remaining two agars were mineral salts (MS), and MS ammended with 0.05 mL/L #2 fuel oil (MSO). Filter sterilized #2 fuel oil was added to MS base after autoclaving at 121°C and cooling to 50°C. All plates were placed in sealed plastic bags and allowed to incubate at 25°C for ten days, at which time they were counted and the three plate average calculated. R2A agar counts were considered to be representative of the maximum recoverable population.

Results and Comments: Recoverable cell counts on each medium are reported in colony forming units /mL with percentage of total recovery for a given medium based upon the counts derived from R2A agar for that site.

SITE	MEDIUM	CPU/ML	% OF TOTAL POPULATION
SB-1	R2A	3.3×10^5	100
	MS	1.4×10^5	42
	MSO	8.4×10^4	25
SB-2	R2A	5.3×10^4	100
	MS	3.0×10^4	57
	MSO	1.0×10^4	18

Existing within the normal population of a fertile soil are organisms capable of degrading a vast array of organic compounds. Normally the portion of a population potentially capable of degrading a xenobiotic compound is relatively low, 10% or less. Upon prolonged exposure to an unusual carbon source, however, the population reacts in a manner analogous to that of an enrichment culture, with the proportion of the population able to exploit the excess carbon occupying a greater percentage of the total population then those which can not, generally 15% or greater. Thus the percentage of a groundwater population capable of degrading an unusual target compound may serve as an indicator that biodegradation of that compound is taking place at the site examined, and by implication that enhancement of that

subpopulation may aid in cleanup of a toxic spill.

In realization of the fact that no one medium is capable of isolating all viable cells from every possible environment, MicroAssays has chosen R2A agar as a nutritionally complete, if dilute medium capable of supporting the growth of a wide variety of microorganisms from a range of environments. The counts obtained upon R2A agar therefore represent an approximation of the total number of recoverable cells.

Counts on MS agar are performed to demonstrate that growth on MO agar results from the addition of the target compound, although some growth on the basal medium is typical, most probably due to the contribution of trace organics from the agar used to solidify the medium, or from soluble carbon carried over from soil samples.

MSO agar tests the ability of the population to survive and grow on the target compound.

Two comparisons may be made in this case to assess the probability for the microbial degradation of fuel oil at this site. First, there is a significant decline in the overall microbial population when the test site SB-2 is compared to the control site SB-1, for all three categories. Further, counts on MS agar are greater then those on MSO agar for both sites. These findings indicate that the contaminant is overtly toxic to the population at the site, and that no significant enrichment for organisms capable of degrading the fuel oil has taken place.

Second, organisms capable of surviving exposure to fuel oil comprise 20% of the population at the contaminated site. Generally, a recovery of >15% is considered ample evidence that active biodegradation of the target compound is taking place. However, as the total number of cells/Gr. capable of metabolizing the oil is at the low end of the scale for normal soils, and that it is difficult in light of the high MS agar counts to distinguish between organisms which may degrade the oil and those which merely survive contact with it, it would appear that the potential for the bioremediation of this particular site is marginal. This is unusual as the medium length hydrocarbons comprising fuel oils are generally susceptible to biodegradation. Multiple point studies to assure that the current results are not simply a anomaly, or examination of oxygen enriched vs. static samples may be desirable before a full scale remedial effort is undertaken.

Anthony A. Rutkowski, Ph.D.
Micro. Lab. Director

CHAIN OF CUSTODY RECORD

MicroAssays of Vermont

RR# Box 5210 P.O. Box 189
Montpelier, VT 05602
Ph. (802)223-1468 Fax (802)223-8688

CLIENT NAME: WELDON EMCON
ADDRESS: CHACE MILL 1 MILL STREET, BOX 815
PROJECT NAME: USPS LUDLOW, VT.
PROJECT NUMBER: ~~042~~ 04722.02
PROJECT MANAGER: NICH NOWLAN
SAMPLER: EUGENE MARTIN

ANALYSIS REQUESTED

Page 1 of 1

MAV #

Sample Location	Date	Time	# of cont.	pres ervd	Sample Type	BACTERIAL PROFILE AS PER LETTER TO JOE HAYES FROM GARY DATED 11-11-94	REMARKS:
SB-2 SS-5 9'-10.5'	12-19-94	14:05	1	NO	SOIL	X	FIELD : WINTER "HOTSPOT"
SB-1 SS-4 11'-13'	12-20-94	10:52	1	NO	SOIL	X	

Relinquished by:	Received by:	Date/Time	Relinquished by:	Received by:	Date/Time
Eugene J. Martin 12-19-94					

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

CERTIFICATE OF ANALYSIS

Client: Wehran Engineering

Address: Chace Mill Box B15
1 Mill Road
Burlington, VT 05401

Attn: Nick Nowlan

Project Number: 04722-02

Site: USPS / Ludlow, VT

Laboratory Job Number: L9410744

Invoice Number: 70046

Date Received: 30-DEC-94

Date Reported: 06-JAN-95

Delivery Method: Fed ex

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L9410744-01	MW-1	
L9410744-02	MW-2	
L9410744-03	MW-3	

Authorized by: For

James R. Roth, PhD - Laboratory Manager

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9410744-01
MW-1
Sample Matrix: LIQUID

Date Collected: 28-DEC-94
Date Received : 30-DEC-94
Date Reported : 06-JAN-95

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1 Amber Glass

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS
Hydrocarbons, Total	19.	mg/l	0.50	1	418.1	03-Jan	04-Jan

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9410744-02
MW-2
Sample Matrix: LIQUID

Date Collected: 28-DEC-94
Date Received : 30-DEC-94
Date Reported : 06-JAN-95

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1 Amber Glass

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS
Hydrocarbons, Total	ND	mg/l	0.50	1	418.1	03-Jan	04-Jan

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9410744-03
MW-3
Sample Matrix: LIQUID

Date Collected: 28-DEC-94
Date Received : 30-DEC-94
Date Reported : 06-JAN-95

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1 Amber Glass

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS
Hydrocarbons, Total	ND	mg/l	0.50	1	418.1	03-Jan	04-Jan

Comments: Complete list of References and Glossary of Terms found in Addendum I

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. 1986.

GLOSSARY OF TERMS AND SYMBOLS

< Indicates analyte not detected at stated value, i.e. Reporting Detection Limit.

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

MICROASSAYS OF VERMONT INCORPORATED

Client Name: Wehran Emcon.
Address: Chace Mill, 1 Mill St. Box B15 Burlington, VT.
Project Name: USPS Ludlow, VT.
Project No.: Ø4722.Ø2
Project Manager: Eugene Martin

Analysis Requested: Assessment of the potential for biodegradation of #2 fuel oil.

Samples: Two samples were submitted on 12/19/94, identified as SB-1 SS4 (control soil) and SB-2 SS5 (test soil).

Method: Samples were treated by ten fold serial dilution in buffered water, 10^{-4}-10^{-6} and Ø.1 mL of each dilution spread plated in triplicate onto each of three media. R2A agar was used as a control, representing a nutritionally complex substrate. The remaining two agars were mineral salts (MS), and MS ammended with Ø.Ø5 mL/L #2 fuel oil (MSO). Filter sterilized #2 fuel oil was added to MS base after autoclaving at 121°C and cooling to 50°C. All plates were placed in sealed plastic bags and allowed to incubate at 25°C for ten days, at which time they were counted and the three plate average calculated. R2A agar counts were considered to be representative of the maximum recoverable population.

Results and Comments: Recoverable cell counts on each medium are reported in colony forming units /mL with percentage of total recovery for a given medium based upon the counts derived from R2A agar for that site.

SITE	MEDIUM	CFU/ML	% OF TOTAL POPULATION
SB-1	R2A	$3.3x10^5$	100
	MS	$1.4x10^5$	42
	MSO	$8.4x10^4$	25
SB-2	R2A	$5.3x10^4$	100
	MS	$3.0x10^4$	57
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Micro. Lab. Director